

VOLUME IV

1488

39¢

ALONG THE WAY IN

ARITHMETIC

Beginning Multiplication and Division

Ages 7-10



WITH PERFORATED PAGES





VOLUME IV
**ALONG THE WAY IN
ARITHMETIC**

*Beginning Multiplication
and Division*

Planned by
MARY LOU PETERSON, B.S.

Under the direction of
PAUL W. EBERMAN, Ph.D.

**Professor of Education
UNIVERSITY OF WISCONSIN**

Illustrated by
ROBERTA PAFLIN

No part of this book may be reproduced or copied in
any form without written permission from the publisher.

Copyright © 1963 by
WHITMAN PUBLISHING CO., RACINE, WIS.
Printed in U.S.A. by Western Printing and Lithographing Co.

Reviewing Column Addition

Let's review to find out how many facts in arithmetic you already know. Pages 2-10 in this book will let you review and check yourself on arithmetic facts you have learned. If you can do these pages easily, you are ready to go ahead with the rest of the book.

Row A

2	3	5	4	3	4	3
3	4	1	0	1	4	2
<u>+1</u>	<u>+2</u>	<u>+2</u>	<u>+5</u>	<u>+3</u>	<u>+1</u>	<u>+3</u>

Row B

7	3	5	8	7	6	7
2	4	4	2	3	3	6
<u>+1</u>	<u>+3</u>	<u>+6</u>	<u>+5</u>	<u>+5</u>	<u>+1</u>	<u>+2</u>

Row C

9	9	7	5	3	9	8
1	9	1	3	5	9	6
<u>+5</u>	<u>+2</u>	<u>+7</u>	<u>+8</u>	<u>+9</u>	<u>+5</u>	<u>+5</u>

Row D

7	5	9	8	5	7	9
6	8	9	8	8	9	8
<u>+5</u>	<u>+7</u>	<u>+2</u>	<u>+7</u>	<u>+9</u>	<u>+8</u>	<u>+6</u>

Check your answers with page 5.

Number wrong _____.

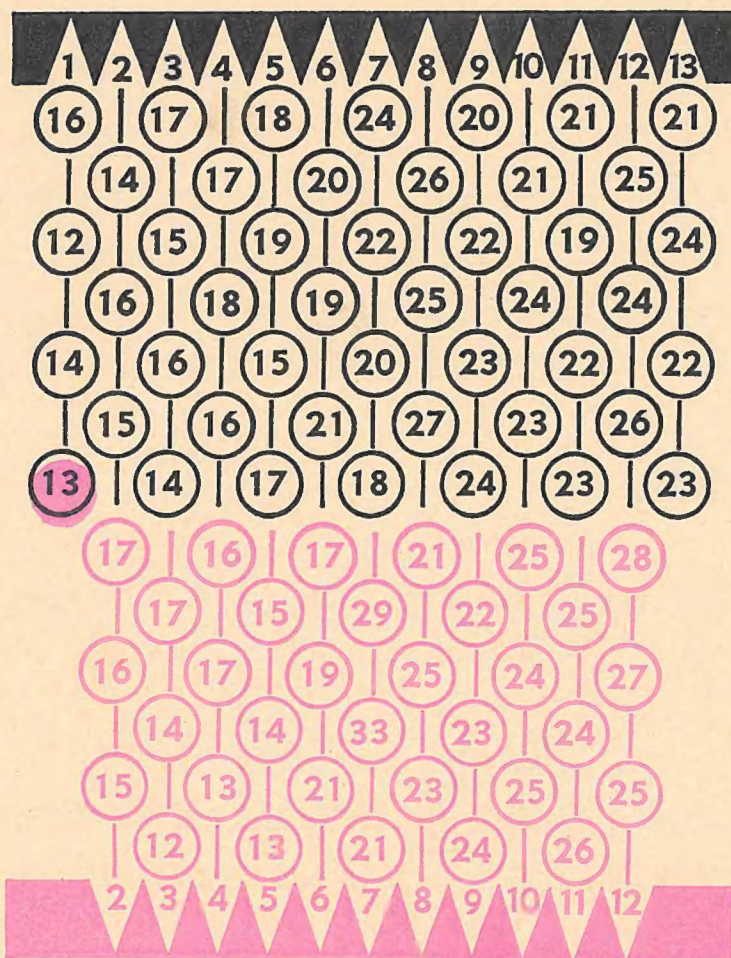
Draw a line around the problems that are wrong. Use pennies or buttons to count out these problems and discover what you did wrong in working them.

Add

$\triangle 1$ 11 $+2$ <hr/> $\triangle 5$ 12 $+2$ <hr/> $\triangle 9$ 18 $+5$ <hr/>	$\triangle 2$ 12 $+3$ <hr/> $\triangle 6$ 12 $+8$ <hr/> $\triangle 10$ 16 $+8$ <hr/>	$\triangle 2$ 11 $+6$ <hr/> $\triangle 6$ 16 $+5$ <hr/> $\triangle 10$ 17 $+7$ <hr/>	$\triangle 3$ 12 $+4$ <hr/> $\triangle 7$ 15 $+9$ <hr/> $\triangle 11$ 18 $+4$ <hr/>	$\triangle 3$ 14 $+3$ <hr/> $\triangle 7$ 14 $+7$ <hr/> $\triangle 11$ 19 $+6$ <hr/>	$\triangle 4$ 13 $+5$ <hr/> $\triangle 8$ 18 $+8$ <hr/> $\triangle 12$ 17 $+9$ <hr/>	$\triangle 4$ 12 $+5$ <hr/> $\triangle 8$ 17 $+6$ <hr/> $\triangle 12$ 19 $+9$ <hr/>	$\triangle 5$ 13 $+6$ <hr/> $\triangle 9$ 15 $+7$ <hr/> $\triangle 13$ 15 $+8$ <hr/>
--	---	---	---	---	---	---	---

To check your answers, color in the circle with the right answer to each problem. Match the colors. The first one has been done for you.

If your answers are right, you will have a picture of a _____ . (Turn to page 5 to see if you have the correct picture.)



How Many Pairs Equal 93?

There are forty-six pairs of numbers on this chart that equal 93 when added together. If you know how, you can find them easily. Keep a record of the pairs you find on another sheet of paper. When you have 46 pairs you have found them all.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Hint: Add the numbers in the smallest rectangle.

Ex.

$$\begin{array}{r} 36 \\ +57 \\ \hline \end{array}$$

$$\begin{array}{r} 46 \\ +47 \\ \hline \end{array}$$

$$\begin{array}{r} 56 \\ +37 \\ \hline \end{array}$$

Find the rest.

Subtraction

Row A

$\begin{array}{r} 17 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ -8 \\ \hline \end{array}$
---	---	---	---	---	---	---

Row B

$\begin{array}{r} 10 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ -3 \\ \hline \end{array}$
---	---	---	---	---	---	---

Row C

$\begin{array}{r} 13 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ -9 \\ \hline \end{array}$
---	---	---	---	---	---	---

Row D

$\begin{array}{r} 14 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ -7 \\ \hline \end{array}$
---	---	---	---	---	---	---

Row E

$\begin{array}{r} 15 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ -4 \\ \hline \end{array}$
---	---	---	---	---	---	---

Check your answers by using buttons or pennies.

Answers for page 2:

Row A	6	9	8	9	7	9	8
Row B	10	10	15	15	15	10	15
Row C	15	20	15	16	17	23	19
Row D	18	20	20	23	22	24	23

Answer for page 3:

The picture is a baseball diamond. Did you have a home run?

Subtracting Money

Joe had three dimes. Ann asked for fourteen cents. How could Joe give Ann fourteen cents? How much would Joe have left?

$$\begin{array}{rcl}
 \text{3 dimes} & = & \text{2 dimes} + 10 \text{ pennies} \\
 \text{14 cents} & = & \text{1 dime} + 4 \text{ pennies} \\
 & & \hline
 & & \text{1 dime} + 6 \text{ pennies} = 16 \text{ cents}
 \end{array}$$

Subtract. Use coins if you need help.

Row A

$$\begin{array}{r}
 30¢ \\
 -15¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 20¢ \\
 -11¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 44¢ \\
 -18¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 50¢ \\
 -26¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 81¢ \\
 -64¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 90¢ \\
 -47¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 61¢ \\
 -36¢ \\
 \hline
 \end{array}$$

Row B

$$\begin{array}{r}
 51¢ \\
 -28¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 38¢ \\
 -19¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 78¢ \\
 -57¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 41¢ \\
 -19¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 92¢ \\
 -78¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 73¢ \\
 -39¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 93¢ \\
 -66¢ \\
 \hline
 \end{array}$$

Row C

$$\begin{array}{r}
 34¢ \\
 -27¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 46¢ \\
 -28¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 68¢ \\
 -39¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 82¢ \\
 -56¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 87¢ \\
 -69¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 76¢ \\
 -49¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 57¢ \\
 -48¢ \\
 \hline
 \end{array}$$

Row D

$$\begin{array}{r}
 52¢ \\
 -29¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 64¢ \\
 -26¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 54¢ \\
 -39¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 73¢ \\
 -45¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 72¢ \\
 -57¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 75¢ \\
 -57¢ \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 85¢ \\
 -59¢ \\
 \hline
 \end{array}$$

Check your answers with page 8.

Add

Row A

56	32	22	33	16	35	24
11	44	35	26	23	46	37
<u>+22</u>	<u>+23</u>	<u>+11</u>	<u>+32</u>	<u>+44</u>	<u>+15</u>	<u>+28</u>

Row B

16	19	14	43	28	19	46
47	37	59	28	38	47	27
<u>+27</u>	<u>+42</u>	<u>+26</u>	<u>+17</u>	<u>+19</u>	<u>+18</u>	<u>+18</u>

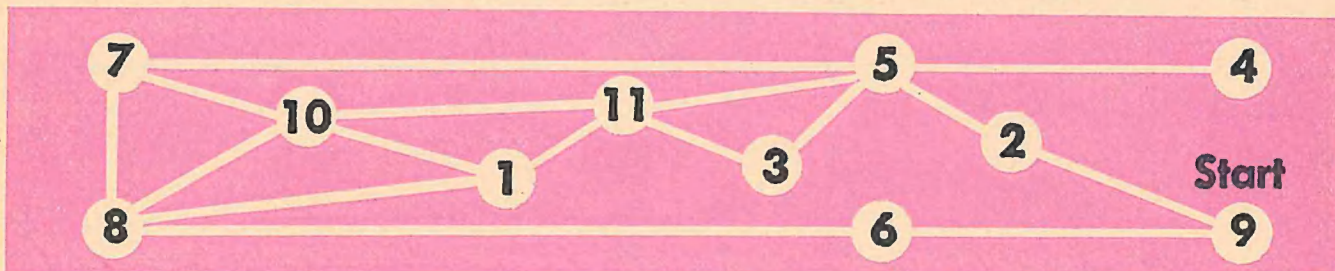
Row C

				7	8	8
4	3	7	8	5	8	9
5	9	7	6	9	9	7
3	4	8	5	4	6	5
<u>+6</u>	<u>+5</u>	<u>+7</u>	<u>+4</u>	<u>+5</u>	<u>+7</u>	<u>+6</u>

Check your answers with page 8.

A Number Puzzle—Can you open the lock?

Ann had a jewelry box with a lock that opened when the right buttons were pushed. One day she forgot which buttons to push. But she did remember that she had to start with 9 and end with 8. Only numbers joined by lines could be punched in order and the sum of all numbers punched was 31. The answer is on page 9.



Will you add or subtract? Look at the signs.

Row A

13	14	18	36	25	17	19
<u>+6</u>	<u>+2</u>	<u>+8</u>	<u>+58</u>	<u>+47</u>	<u>+45</u>	<u>+29</u>

Row B

3	5	6	49	64	56	13
2	7	7	18	13	10	32
<u>+4</u>	<u>+3</u>	<u>+8</u>	<u>+24</u>	<u>+19</u>	<u>+27</u>	<u>+49</u>

Row C

16	11	13	15	24	37	25
<u>-5</u>	<u>-9</u>	<u>-8</u>	<u>-8</u>	<u>-9</u>	<u>-8</u>	<u>-7</u>

Row D

48	33	58	98	57	33	56
<u>-26</u>	<u>-17</u>	<u>-29</u>	<u>-26</u>	<u>-39</u>	<u>-18</u>	<u>-29</u>

Look below to check your answers.

Answers for page 6:

Row A	15¢	9¢	26¢	24¢	17¢	43¢	25¢
Row B	23¢	19¢	21¢	22¢	14¢	34¢	27¢
Row C	7¢	18¢	29¢	26¢	18¢	27¢	9¢
Row D	23¢	38¢	15¢	28¢	15¢	18¢	26¢

Answers for page 7:

Row A	89	99	68	91	83	96	89
Row B	90	98	99	88	85	84	91
Row C	18	21	29	23	30	38	35

Answers for page 8:

Row A	19	16	26	94	72	62	48
Row B	9	15	21	91	96	93	94
Row C	11	2	5	7	15	29	18
Row D	22	16	29	72	18	15	27

A Number Trick for You

Find the answers to these subtraction problems. See if you can discover a number trick to try on your friends.

$$\begin{array}{r} 21 \\ -12 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ -23 \\ \hline \end{array}$$

$$\begin{array}{r} 41 \\ -14 \\ \hline \end{array}$$

$$\begin{array}{r} 52 \\ -25 \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ -13 \\ \hline \end{array}$$

$$\begin{array}{r} 43 \\ -34 \\ \hline \end{array}$$

$$\begin{array}{r} 51 \\ -15 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ -24 \\ \hline \end{array}$$

$$\begin{array}{r} 72 \\ -27 \\ \hline \end{array}$$

$$\begin{array}{r} 43 \\ -34 \\ \hline \end{array}$$

$$\begin{array}{r} 62 \\ -26 \\ \hline \end{array}$$

$$\begin{array}{r} 53 \\ -35 \\ \hline \end{array}$$

$$\begin{array}{r} 63 \\ -36 \\ \hline \end{array}$$

$$\begin{array}{r} 84 \\ -48 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ -45 \\ \hline \end{array}$$

$$\begin{array}{r} 82 \\ -28 \\ \hline \end{array}$$

$$\begin{array}{r} 64 \\ -46 \\ \hline \end{array}$$

$$\begin{array}{r} 85 \\ -58 \\ \hline \end{array}$$

$$\begin{array}{r} 91 \\ -19 \\ \hline \end{array}$$

$$\begin{array}{r} 75 \\ -57 \\ \hline \end{array}$$

$$\begin{array}{r} 65 \\ -56 \\ \hline \end{array}$$

$$\begin{array}{r} 92 \\ -29 \\ \hline \end{array}$$

$$\begin{array}{r} 76 \\ -67 \\ \hline \end{array}$$

$$\begin{array}{r} 95 \\ -59 \\ \hline \end{array}$$

$$\begin{array}{r} 73 \\ -37 \\ \hline \end{array}$$

$$\begin{array}{r} 76 \\ -67 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ -18 \\ \hline \end{array}$$

$$\begin{array}{r} 74 \\ -47 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ -68 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ -17 \\ \hline \end{array}$$

$$\begin{array}{r} 87 \\ -78 \\ \hline \end{array}$$

$$\begin{array}{r} 96 \\ -69 \\ \hline \end{array}$$

$$\begin{array}{r} 83 \\ -38 \\ \hline \end{array}$$

$$\begin{array}{r} 97 \\ -79 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ -16 \\ \hline \end{array}$$

$$\begin{array}{r} 94 \\ -49 \\ \hline \end{array}$$

Did you discover the number trick? If not, look at this example:

minuend \rightarrow 64

subtrahend \rightarrow -46 (the subtrahend is the minuend reversed)

difference \rightarrow 18 (sum of the digits 1 + 8 in the difference = 9)

Look at the above subtraction problems. Are these two things true in all of the problems? Have a friend take any two-place number, reverse the numbers and subtract. If he tells you one digit of the difference, you can tell him what the other digit is, because the sum of the two digits is always 9.

Answer to puzzle on page 7: (9-2-5-7-8)

Using a Number Chart

123
45

	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79
80	81	82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97	98	99

68
790

Use the chart to answer the following questions.

- What number means 2 tens and 7 ones? _____
- What number is ten more than 4 ones? _____
- What number is ten less than 2 tens? _____
- Count by tens to fill in the missing numbers.

10	—	—	—	50	—	—	—	90
6	—	—	—	46	—	—	—	96
- What number is ten more than 3 tens and 3 ones? _____
- Count by fives to fill in the missing numbers.

5	—	—	—	—	—	—	—	50
---	---	---	---	---	---	---	---	----
- Count by two's, starting with two.

2	—	—	—	—	—	—	—	—	—
—	—	—	30	—	—	—	—	—	—
—	—	50	—	—	—	—	—	—	—
—	—	—	—	—	80	—	—	—	—
—	—	—	—	98	—	—	—	—	—
- These are even numbers. Color the squares with the even numbers on the chart.
- Look at the chart—the numbers you have not colored are odd numbers. Write the odd numbers.

1	—	—	—	—	—	—	—	—	—
—	—	—	—	31	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	91	—	—	—	99	—	—	—	—

Place Value

When you write numbers from 10 to 99, you use two places. Can you write numbers larger than ninety-nine in two places?



Draw lines to connect the words and numbers which mean the same.

- | | |
|-------------------------------|-----|
| 1. one hundred ten | 955 |
| 2. three hundred thirty-three | 502 |
| 3. nine hundred fifty-five | 426 |
| 4. four hundred twenty-six | 110 |
| 5. five hundred two | 333 |

Tell how many hundreds, tens, and ones.

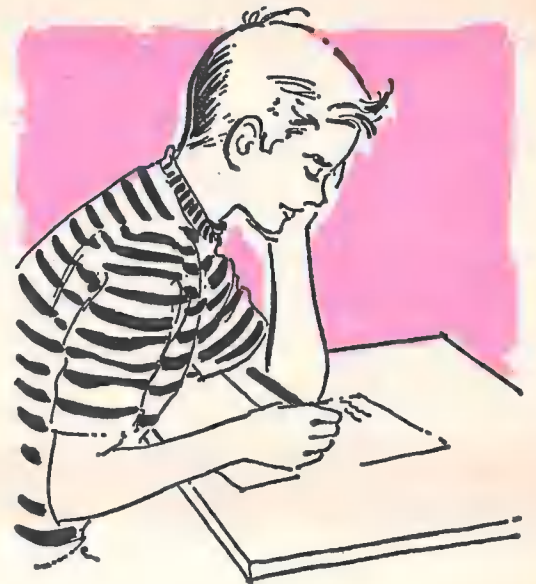
- | | |
|------------------------------|--|
| 6. three hundred ten | <u>3</u> hundreds <u>1</u> tens <u>0</u> ones |
| 7. one hundred thirty | <u> </u> hundreds <u> </u> tens <u> </u> ones |
| 8. two hundred twenty | <u> </u> hundreds <u> </u> tens <u> </u> ones |
| 9. seven hundred fourteen | <u> </u> hundreds <u> </u> tens <u> </u> ones |
| 10. eight hundred eight | <u> </u> hundreds <u> </u> tens <u> </u> ones |
| 11. nine hundred ninety-nine | <u> </u> hundreds <u> </u> tens <u> </u> ones |
| 12. 862 | <u> </u> hundreds <u> </u> tens <u> </u> ones |
| 13. 547 | <u> </u> hundreds <u> </u> tens <u> </u> ones |
| 14. 789 | <u> </u> hundreds <u> </u> tens <u> </u> ones |
| 15. 901 | <u> </u> hundreds <u> </u> tens <u> </u> ones |

Check your answers with page 13.

Writing Numbers

Write the following numbers in words.

- 120 one hundred twenty
1. 599 _____
2. 464 _____
3. 237 _____
4. 882 _____
5. 305 _____
6. 956 _____
7. 748 _____



Write the missing numbers.

8. Count by ones.

100	105	110
-----	-----	-----

9. This shows counting by _____

989	990	995	999
-----	-----	-----	-----

10. Count by tens.

100	110	150	200
-----	-----	-----	-----

11. Count by hundreds.

100	500	900
-----	-----	-----

12. This shows counting by _____

465	475	505	555
-----	-----	-----	-----

13. This shows counting by _____

99	199	599	999
----	-----	-----	-----

Check your answers with page 14.

Counting

Count the number of birds.



Underline the correct answer.

There are—one hundred twelve birds.
eighty-nine birds.
one hundred twenty birds.

Put a red line around every group of ten birds.

How many groups of ten do you have? _____

Now count the groups by ten.

Ten tens are one hundred. Put a blue line around ten of the tens' groups.

You now have one hundred inside the blue line. If you are correct, you will have two groups outside the blue line.

Which way was it easiest to see how many birds—as one hundred twenty ones, as twelve groups of ten, or as a group of one hundred and two tens?

Answers for page 11:

- | | |
|--------|------------------------------|
| 2. 333 | 7. 1 hundred 3 tens 0 ones |
| 3. 955 | 8. 2 hundreds 2 tens 0 ones |
| 4. 426 | 9. 7 hundreds 1 ten 4 ones |
| 5. 502 | 10. 8 hundreds 0 tens 8 ones |

- | |
|------------------------------|
| 11. 9 hundreds 9 tens 9 ones |
| 12. 8 hundreds 6 tens 2 ones |
| 13. 5 hundreds 4 tens 7 ones |
| 14. 7 hundreds 8 tens 9 ones |
| 15. 9 hundreds 0 tens 1 one |

Write the numbers from 1 to 119.

	1	2							

Answers for page 12:

- | | |
|-----------------------------|---|
| 1. five hundred ninety-nine | 7. seven hundred forty-eight |
| 2. four hundred sixty-four | 8. 101, 102, 103, 104, 106, 107, 108, 109 |
| 3. two hundred thirty-seven | 9. 991, 992, 993, 994, 996, 997, 998 |
| 4. eight hundred eighty-two | 10. 120, 130, 140, 160, 170, 180, 190 |
| 5. three hundred five | 11. 200, 300, 400, 600, 700, 800 |
| 6. nine hundred fifty-six | 12. 485, 495, 515, 525, 535, 545, 565 |
| | 13. 299, 399, 499, 699, 799, 899 |

Using Counters

Take a scissors and a large envelope.

On page 14: 1. Cut the numbers from 1-19 on the black lines to make ones counters.

2. Cut the other numbers in groups of ten on the colored lines (from 20-29, etc.).

On page 4: 3. Cut out the hundred square in one piece.

Count the counters as you put them in the envelope.

19 ones

10 tens

1 hundred

Using these counters, let's find out what different things one hundred can mean.

1. Count the number of squares on the hundred square.

There are _____ ones in one hundred.

2. Take the tens and lay them on the hundred square. How many tens does it take to completely cover the hundred?

There are _____ tens in one hundred.

3. There is _____ hundred in one hundred.

Can you show the following problems by using your counters?

four tens
+ six tens

seven tens
+ three tens

eight tens
+ two tens



Do these problems with your counters.

5 tens
+ 5 tens

10 tens = 1 hundred

50
+ 50

60
+ 40

30
+ 70

80
+ 20

Building a Tree House



Sam and Ted were collecting lumber to build a tree house. Sam found fifty-five boards. Ted found forty-seven boards. How many boards did they collect?

$$\begin{array}{r} \text{1 ten} \\ 5 \text{ tens and } 5 \text{ ones} \\ + 4 \text{ tens and } 7 \text{ ones} \\ \hline \end{array}$$

Think

5 ones + 7 ones = 12 ones
12 ones = 1 ten + 2 ones
Put 2 in ones' column.
Put 1 ten at top of tens' column.

Next add the number of tens.

$$1 \text{ ten} + 5 \text{ tens} + 4 \text{ tens} = 10 \text{ tens}$$

$$\begin{array}{r} \text{1 ten} \\ 5 \text{ tens and } 5 \text{ ones} \\ + 4 \text{ tens and } 7 \text{ ones} \\ \hline 10 \text{ tens and } 2 \text{ ones} \end{array}$$

Think—10 tens = 1 hundred and 0 tens

10 tens and 2 ones = 1 hundred and 0 tens and 2 ones

1 hundred and 2 ones = 102

The short way of writing this problem is:

$$\begin{array}{r} 1 \\ 55 \\ + 47 \\ \hline 102 \end{array}$$

Can you explain this using your counters?

Problems to Solve

Use your counters to work these problems. Then do them the short way in the box.

1. Betty was making candy for her birthday party. She made eighty-seven caramels and sixty-eight mints. How many pieces of candy did she make? _____

$$\begin{array}{r} 1 \\ 87 \text{ (short form)} \\ + 68 \\ \hline 155 \end{array}$$

Can you explain why?

2. Tom has sixty-seven stamps. Sam gave him thirty-seven stamps. How many stamps does Tom have now? _____

3. Susan has fifty-one dolls, one for every state and Canada. Sally has thirty-nine dolls. How many do they have together? _____

4. Ted has seventy-nine baseball cards. Fred has forty-four cards. How many cards do they have together? _____

5. The fifth grade planted fifty-four plants for Mother's Day. The third grade planted sixty-eight plants. How many plants were planted? _____

6. Joe sold eighty-nine morning newspapers and ninety-six evening papers. How many papers did he sell? _____

Check your answers with page 19.

How Many Pairs Equal 100?

There are forty-five pairs of numbers on this chart that equal 100 when added together. If you know how, you can find them easily. Keep a record of the pairs you find. When you have 45 pairs, you have found them all.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Hint: Add the numbers in the smallest rectangle. Then add the numbers in the corners of the next rectangle. For example:

$$\begin{array}{r}
 45 \quad 34 \quad 36 \\
 +55 \quad +66 \quad +64
 \end{array}$$

Find the rest.

Cut out the whole hundred block in one piece and put it in your envelope.

Adding

Find the sums. Use your counters to help if you have difficulty.

Row A

28	34	43	55	67	49
<u>+72</u>	<u>+66</u>	<u>+77</u>	<u>+65</u>	<u>+63</u>	<u>+61</u>

Row B

46	54	48	33	22	91
<u>+55</u>	<u>+68</u>	<u>+73</u>	<u>+76</u>	<u>+86</u>	<u>+59</u>

Row C

36	58	77	39	84	91
<u>+47</u>	<u>+62</u>	<u>+33</u>	<u>+37</u>	<u>+56</u>	<u>+11</u>

Row D

45	37	46	63	48	75
<u>+47</u>	<u>+88</u>	<u>+59</u>	<u>+79</u>	<u>+88</u>	<u>+57</u>

Row E

98	87	89	57	89	95
<u>+77</u>	<u>+66</u>	<u>+76</u>	<u>+94</u>	<u>+69</u>	<u>+88</u>

Look at page 20. How many of your answers are correct? If you had some wrong answers, use your counters to get the right answer.

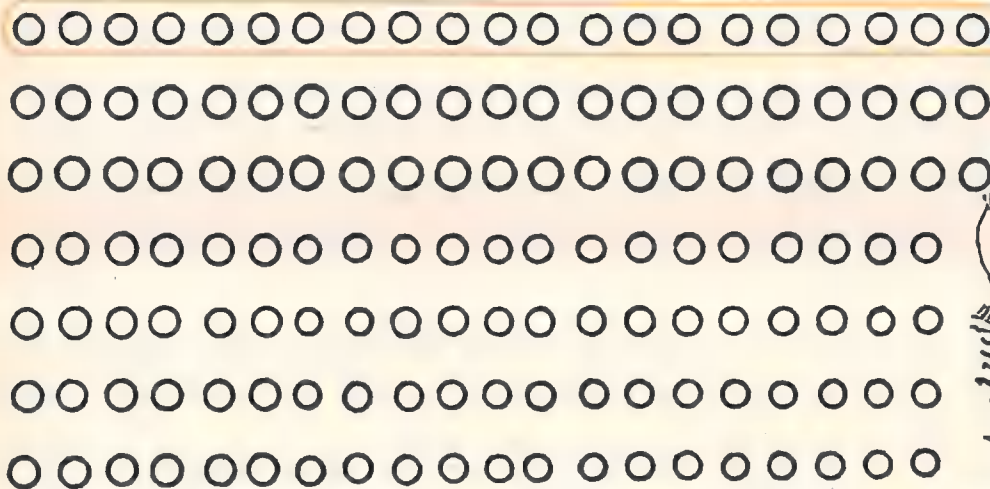
Answers for page 17:

1. 155 2. 104 3. 90 4. 123 5. 122 6. 185

Subtraction

Here are some ways we use subtraction. Look at the two problems below.

1. Mike had one hundred forty-three marbles. He gave twenty-one to Ted. The rest he gave to Joe. How many marbles did Joe get?



The marbles Joe received can be found by counting the marbles outside the colored line. In this problem, subtraction was used to divide the large group into two smaller groups.

2. Joe has one hundred twenty-two marbles. Ted has twenty-one marbles. How many more marbles does Joe have than Ted?

This answer may be found by matching one for one the marbles Ted has with Joe's marbles. Then count the number of marbles not matched.

$$\begin{array}{r}
 122 \\
 -21 \text{ (number matched)} \\
 \hline
 101 \text{ (number left over)}
 \end{array}$$

In this problem subtraction was used to compare two groups and to find how many more were in the larger group.

Answers for page 19:

Row A	100	100	120	120	130	110
Row B	101	122	121	109	108	150
Row C	83	120	110	76	140	102
Row D	92	125	105	142	136	132
Row E	175	153	165	151	158	183

Subtraction

Find the difference.

Row A

$\begin{array}{r} 245 \\ -24 \\ \hline \end{array}$	$\begin{array}{r} 156 \\ -41 \\ \hline \end{array}$	$\begin{array}{r} 265 \\ -53 \\ \hline \end{array}$	$\begin{array}{r} 375 \\ -43 \\ \hline \end{array}$	$\begin{array}{r} 798 \\ -54 \\ \hline \end{array}$	$\begin{array}{r} 879 \\ -46 \\ \hline \end{array}$
---	---	---	---	---	---

Find the difference. Use your counters to explain these problems.

- | | |
|---|--|
| 1. Tom planted one hundred thirty-four trees for a wind break. Sixteen trees died. How many trees were left? _____ | $\begin{array}{r} 1 \text{ hundred } 3 \text{ tens } 4 \text{ ones} \\ - \quad \quad \quad 1 \text{ ten } 6 \text{ ones} \\ \hline 1 \text{ hundred } 2 \text{ tens } 14 \text{ ones} \\ - \quad \quad \quad 1 \text{ ten } 6 \text{ ones} \\ \hline 1 \text{ hundred } 1 \text{ ten } 8 \text{ ones} = 118 \end{array}$ |
| 2. Tom planted three hundred fifty-six strawberry plants in his garden. Ted planted thirty-seven plants. How many more plants did Tom plant than Ted? _____ | |
| 3. Betty has nine hundred eighty-six stamps. Kathy has sixty-eight stamps. How many more stamps does Betty have than Kathy? _____ | |

Find the difference.

Row B

$\begin{array}{r} 123 \\ -16 \\ \hline \end{array}$	$\begin{array}{r} 156 \\ -47 \\ \hline \end{array}$	$\begin{array}{r} 496 \\ -85 \\ \hline \end{array}$	$\begin{array}{r} 531 \\ -29 \\ \hline \end{array}$	$\begin{array}{r} 982 \\ -79 \\ \hline \end{array}$	$\begin{array}{r} 756 \\ -29 \\ \hline \end{array}$
---	---	---	---	---	---

Check your answers with page 24.

Adding and Subtracting

Find the **sums**.

Across							Down		
A	B	C		D	E	F	D	E	F
$\begin{array}{r} 264 \\ +123 \\ \hline 387 \end{array}$	$\begin{array}{r} 143 \\ +102 \\ \hline \end{array}$	$\begin{array}{r} 415 \\ +224 \\ \hline \end{array}$	A				$\begin{array}{r} 211 \\ +115 \\ \hline \end{array}$	$\begin{array}{r} 731 \\ +112 \\ \hline \end{array}$	$\begin{array}{r} 547 \\ +212 \\ \hline \end{array}$
			B						
			C						

First fill in the square with the answers to A, B, C across. (A across—answer is 387)

If your answers are correct D, E, F answers will check down in the square.

If they do not check, you should do the problems again until you find your mistake and the squares check.

Checking Square

	D	E	F
A	3	8	7
B			
C			

Find the **sums**. Check your answers in the squares.

Across							Down		
A	B	C		D	E	F	D	E	F
$\begin{array}{r} 826 \\ +150 \\ \hline \end{array}$	$\begin{array}{r} 550 \\ +345 \\ \hline \end{array}$	$\begin{array}{r} 651 \\ +336 \\ \hline \end{array}$	A				$\begin{array}{r} 716 \\ +273 \\ \hline \end{array}$	$\begin{array}{r} 544 \\ +254 \\ \hline \end{array}$	$\begin{array}{r} 314 \\ +343 \\ \hline \end{array}$
			B						
			C						

Find the **differences**. Check your answers in the squares.

Across							Down		
A	B	C		D	E	F	D	E	F
$\begin{array}{r} 759 \\ -236 \\ \hline \end{array}$	$\begin{array}{r} 572 \\ -141 \\ \hline \end{array}$	$\begin{array}{r} 997 \\ -101 \\ \hline \end{array}$	A				$\begin{array}{r} 898 \\ -350 \\ \hline \end{array}$	$\begin{array}{r} 799 \\ -560 \\ \hline \end{array}$	$\begin{array}{r} 768 \\ -452 \\ \hline \end{array}$
			B						
			C						

Thought Question: What would happen if you used any six problems? Would the checking square work? Why not?

Three Column Addition



Ted and Jerry sold produce from their garden to make money. One week they sold three hundred forty-seven boxes of strawberries and one hundred twenty-eight boxes of raspberries.

How many boxes of fruit did they sell?

three hundred forty-seven = 347

+ one hundred twenty-eight = +128

There are 3 columns to add—ones, tens, and hundreds.

$$\begin{array}{r} 1 \\ 347 \\ +128 \\ \hline 5 \end{array}$$

1. Add the ones. 7 ones + 8 ones = 15 ones = 1 ten + 5 ones. Write the 5 ones and carry the 1 ten to the tens' column.

$$\begin{array}{r} 1 \\ 347 \\ +128 \\ \hline 75 \end{array}$$

2. Add the tens. 1 ten + 4 tens + 2 tens = 7 tens.

$$\begin{array}{r} 1 \\ 347 \\ +128 \\ \hline 475 \end{array}$$

3. Add the hundreds. 3 hundreds + 1 hundred = 4 hundreds.

Can you do these? Check your answers with page 24.

1. 345	2. 672	3. 618	4. 267	5. 543	6. 826	7. 489
+546	+119	+375	+416	+227	+136	+308

Ted dug five hundred eighty-six potatoes. Jerry dug two hundred thirty-five potatoes. How many potatoes were dug altogether?

$$\begin{array}{r} \text{five hundred eighty-six} = 586 \\ + \text{two hundred thirty-five} = +235 \\ \hline \end{array}$$

Write the 2 tens
and carry 1 hundred

$$\begin{array}{r} 11 \\ 586 \\ +235 \\ \hline 21 \end{array}$$

Write the 8 hundreds

$$\begin{array}{r} 11 \\ 586 \\ +235 \\ \hline 821 \end{array}$$

POTATOES
FOR SALE

1. Add the ones. 6 + 5 = 11 ones = 1 ten + 1 one. Write the 1 one, carry the 1 ten.

2. Add the tens. 1 ten + 8 tens + 3 tens = 12 tens = 1 hundred + 2 tens.

3. Add the hundreds. 1 hundred + 5 hundreds + 2 hundreds = 8 hundreds.

Practice Using Three Column Addition

If you have trouble with these problems, look at page 23 and work the problems again using your hundreds', tens', and ones' counters.

Use the "Checking Square" to check your answers.

Across						Down			
A	B	C		D	E	F	D	E	F
546	425	629	A				589	108	197
+277	+289	+236	B				+289	+108	+148
			C						

Across						Down			
A	B	C		D	E	F	D	E	F
389	292	638	A				461	284	456
+379	+249	+285	B				+298	+358	+357
			C						

Across						Down			
A	B	C		D	E	F	D	E	F
779	368	576	A				699	298	287
+178	+264	+265	B				+269	+236	+434
			C						

Across						Down			
A	B	C		D	E	F	D	E	F
169	483	249	A				249	196	468
+479	+438	+288	B				+446	+227	+349
			C						

Answers for page 21:

Row A 221 115 212 332 744 833

1. 118 2. 319 3. 918

Row B 107 109 411 502 903 727

Answers for page 23:

1. 891 2. 791 3. 993 4. 683 5. 770 6. 962 7. 797

Three Place Subtraction



Ted's mother made jam for the boys to sell in their fruit stand. She made two hundred sixty-one glasses of strawberry jam and one hundred fifty-seven glasses of raspberry jam. How many more glasses of strawberry jam were there than raspberry jam?

$$\begin{array}{r} \text{two hundred sixty-one} = 261 \\ - \text{one hundred fifty-seven} = -157 \\ \hline \end{array}$$

There are 3 places to subtract—ones, tens, and hundreds.

$$\begin{array}{r} 261 \\ - 157 \\ \hline 4 \end{array}$$

1. Can you subtract 7 ones from 1 one? Where can you get more ones? You can exchange 1 of the 6 tens for 10 ones; 6 tens + 1 one = 5 tens + 11 ones. Now subtract. 11 ones minus 7 ones = 4 ones.

$$\begin{array}{r} 261 \\ - 157 \\ \hline 04 \end{array}$$

2. Subtract the tens. 5 tens minus 5 tens = 0 tens.

$$\begin{array}{r} 261 \\ - 157 \\ \hline 104 \end{array}$$

3. Subtract the hundreds. 2 hundreds minus 1 hundred = 1 hundred.

Use your counters to help you with these problems.

$$\begin{array}{r} 573 \\ - 345 \\ \hline \end{array}$$

$$\begin{array}{r} 672 \\ - 419 \\ \hline \end{array}$$

$$\begin{array}{r} 544 \\ - 318 \\ \hline \end{array}$$

$$\begin{array}{r} 775 \\ - 529 \\ \hline \end{array}$$

$$\begin{array}{r} 463 \\ - 217 \\ \hline \end{array}$$

$$\begin{array}{r} 718 \\ - 609 \\ \hline \end{array}$$

$$\begin{array}{r} 864 \\ - 745 \\ \hline \end{array}$$

$$\begin{array}{r} 573 \\ - 345 \\ \hline 228 \end{array} \left. \vphantom{\begin{array}{r} 573 \\ - 345 \\ \hline 228 \end{array}} \right\}$$

How can you check to see if the above problems are correct?

What happens if you add $\begin{array}{r} 228 \\ + 345 \\ \hline \end{array}$?

What happens if you had a wrong answer?

$$\begin{array}{r} 573 \\ - 345 \\ \hline 238 \end{array} \left. \vphantom{\begin{array}{r} 573 \\ - 345 \\ \hline 238 \end{array}} \right\}$$

Add $\begin{array}{r} 238 \\ + 345 \\ \hline \end{array}$

Does this answer check? Why not? Have you found a way to check subtraction?

Subtraction

Sales Record	
1st day	27
2nd day	52
3rd day	71
4th day	84
5th day	35
6th day	82
7th day	48

Ted and Jerry had 418 glasses of jam to sell. They sold 27 glasses the first day. How many glasses were left?

$$\begin{array}{r} 418 \\ - 27 \\ \hline 1 \end{array}$$

1. Subtract the ones. $8 - 7 = 1$

$$\begin{array}{r} 418 \\ - 27 \\ \hline 91 \end{array}$$

2. Can you subtract 2 tens from 1 ten? Where can you get more tens? Remember $10 \text{ tens} = 100$. Exchange one of the 4 hundreds for 10 tens; 4 hundreds + 1 ten = 3 hundreds + 11 tens. Now, 11 tens minus 2 tens = 9 tens.

$$\begin{array}{r} 418 \\ - 27 \\ \hline 391 \end{array}$$

3. Subtract the hundreds. 3 hundreds minus 0 hundreds = 3 hundreds.

How can you check to see if the above answer is correct? Remember from page 25, if you add the **subtrahend** and **difference**, their sum should equal the **minuend**.

$\begin{array}{r} 418 \\ - 27 \\ \hline 391 \end{array}$	minuend subtrahend difference	} 391 difference } + 27 subtrahend 418
--	-------------------------------------	--

Subtract and check to find how many glasses of jam the boys had left at the end of each day.

$$\begin{array}{r} 391 \\ - 52 \\ \hline \end{array}$$

$$\begin{array}{r} 339 \\ - 71 \\ \hline \end{array}$$

$$\begin{array}{r} 268 \\ - 84 \\ \hline \end{array}$$

$$\begin{array}{r} 184 \\ - 35 \\ \hline \end{array}$$

$$\begin{array}{r} 149 \\ - 82 \\ \hline \end{array}$$

$$\begin{array}{r} 67 \\ - 48 \\ \hline \end{array}$$

The total amount of jam sold was 399 glasses. How many glasses were left?

$$\begin{array}{r} 418 \\ - 399 \\ \hline 9 \\ 3 \text{ } 10 \\ 418 \\ - 399 \\ \hline 19 \end{array}$$

4 hundreds + 1 ten + 8 ones = 4 hundreds + 0 tens + 18 ones. 18 ones minus 9 ones = 9 ones.

4 hundreds + 0 tens + 18 ones = 3 hundreds + 10 tens + 18 ones. 10 tens minus 9 tens = 1 ten.

3 hundreds minus 3 hundreds = 0 hundreds.

Sales Record of Stores

Solve the problems. You can use the checking square to see if your answers are correct.

A—Across

The baker made five hundred fifty-one loaves of bread. Three hundred seventy-nine loaves were sold. How many were left?

$$\begin{array}{r} 551 \\ -379 \\ \hline \end{array}$$

B—Across

The manager ordered two hundred twenty-one blue suits and fifty-eight black suits. How many more blue suits were there than black suits?

C—Across

At Christmas, eight hundred eleven pounds of candy were sold. For Easter, they sold three hundred fifty-two pounds of candy. How many more pounds of candy were sold at Christmas?

	D	E	F
A			
B			
C			

D—Down

For Mother's Day, three hundred eleven roses were ordered. One hundred ninety-seven roses were used in bouquets. How many roses were left?

E—Down

At the Grand Opening, nine hundred thirty-four balloons were given away. One hundred sixty-nine were red balloons. How many were other colors?

F—Down

In the winter, seven hundred twenty-eight hats were sold. In summer, four hundred eighty-nine hats were sold. How many more hats were sold in winter?

Subtract

$$\begin{array}{r} 325 \\ -189 \\ \hline \end{array}$$

$$\begin{array}{r} 574 \\ -297 \\ \hline \end{array}$$

$$\begin{array}{r} 867 \\ -758 \\ \hline \end{array}$$

$$\begin{array}{r} 436 \\ -247 \\ \hline \end{array}$$

$$\begin{array}{r} 573 \\ -485 \\ \hline \end{array}$$

$$\begin{array}{r} 288 \\ -189 \\ \hline \end{array}$$

Could you check the above problems using a checking square? Try it. Why does the checking square work in the story problems, but not with these problems? Does the way of checking you learned on page 25 work here? Try it.

Column Addition



Three girl scout troops sold cookies. Troop I sold two hundred fifty-two boxes, Troop II sold three hundred nineteen boxes, and Troop III sold four hundred twenty-six boxes. How many boxes did all three troops sell?

Use your counters to help with this problem.

$$\begin{array}{r} \overset{1}{252} \\ 319 \\ +426 \\ \hline 7 \end{array}$$

1. Add the ones. $2 + 9 = 11$. $11 + 6 = 17$. 17 ones = 1 ten + 7 ones. Write the 7 in the ones' place. Carry the 1 ten.

$$\begin{array}{r} \overset{1}{252} \\ 319 \\ +426 \\ \hline 97 \end{array}$$

2. Add the tens. 1 ten + 5 tens = 6 tens. 6 tens + 1 ten = 7 tens. 7 tens + 2 tens = 9 tens. Write 9 in the tens' place.

$$\begin{array}{r} \overset{1}{252} \\ 319 \\ +426 \\ \hline 997 \end{array}$$

3. Add the hundreds. 2 hundreds + 3 hundreds = 5 hundreds. 5 hundreds + 4 hundreds = 9 hundreds. Write the 9 in the hundreds' place.

Add. Remember to carry when you have 10 or more ones. Use your counters to help you.

Row A

$$\begin{array}{r} 267 \\ 403 \\ +211 \\ \hline \end{array}$$

$$\begin{array}{r} 157 \\ 321 \\ +317 \\ \hline \end{array}$$

$$\begin{array}{r} 436 \\ 213 \\ +324 \\ \hline \end{array}$$

$$\begin{array}{r} 136 \\ 522 \\ +213 \\ \hline \end{array}$$

$$\begin{array}{r} 257 \\ 102 \\ +438 \\ \hline \end{array}$$

$$\begin{array}{r} 518 \\ 245 \\ +116 \\ \hline \end{array}$$

Row B

$$\begin{array}{r} 418 \\ 304 \\ +119 \\ \hline \end{array}$$

$$\begin{array}{r} 208 \\ 325 \\ +156 \\ \hline \end{array}$$

$$\begin{array}{r} 128 \\ 219 \\ +107 \\ \hline \end{array}$$

$$\begin{array}{r} 164 \\ 312 \\ +422 \\ \hline \end{array}$$

$$\begin{array}{r} 407 \\ 219 \\ +116 \\ \hline \end{array}$$

$$\begin{array}{r} 419 \\ 358 \\ +219 \\ \hline \end{array}$$

Check your answers with page 30.

Adding Columns

When you have 10 or more ones, you carry to the tens' place.

Let's find out what happens when there are ten or more tens. Use your counters to show the exchange of 10 ones for 1 ten and 10 tens for one hundred.

$$\begin{array}{r} \overset{1}{6}85 \\ 131 \\ +149 \\ \hline 5 \end{array}$$

1. Add the ones. $5 + 1 = 6$. $6 + 9 = 15$. 15 ones = 1 ten + 5 ones.

Write the 5 ones and carry the 1 ten.

$$\begin{array}{r} \overset{11}{6}85 \\ 131 \\ +149 \\ \hline 65 \end{array}$$

2. Add the tens. 1 ten + 8 tens = 9 tens. 9 tens + 3 tens = 12 tens. 12 tens + 4 tens = 16 tens. 16 tens = 1 hundred + 6 tens.

Write the 6 tens and carry the 1 hundred.

$$\begin{array}{r} \overset{11}{6}85 \\ 131 \\ +149 \\ \hline 965 \end{array}$$

3. Add the hundreds. 1 hundred + 6 hundreds = 7 hundreds. 7 hundreds + 1 hundred = 8 hundreds. 8 hundreds + 1 hundred = 9 hundreds. Write 9 in the hundreds' place.

Take another sheet of paper. Copy the numbers in the squares below into the two problems.

Example:

	D	E	F
A	1	2	4
B	4	8	2
C	2	4	7

Problem 1: (Numbers Across)

$$\begin{array}{r} A \quad 124 \\ B \quad 482 \\ C \quad +247 \\ \hline \end{array}$$

Add

2. (Down)

$$\begin{array}{r} D \quad 142 \\ E \quad 284 \\ F \quad +427 \\ \hline \end{array}$$

Add

The numbers in the squares are arranged so that both problems will have the same sum.

Work the two problems in each square below.

	D	E	F
A	3	4	2
B	2	1	4
C	4	2	9

	D	E	F
A	4	2	2
B	1	7	7
C	3	6	9

	D	E	F
A	3	2	2
B	1	8	2
C	3	1	9

	D	E	F
A	1	4	2
B	5	9	6
C	1	7	8

Try arranging numbers in a square of your own so that both problems have the same sum.

Reviewing Column Addition

Find the sums.

Row A

						9	1
			3	5	9	2	7
4	8	7	5	0	9	3	8
6	4	6	1	1	8	8	5
<u>+3</u>	<u>+2</u>	<u>+5</u>	<u>+8</u>	<u>+6</u>	<u>+7</u>	<u>+4</u>	<u>+9</u>

Number each dot on the triangle with a one-digit number. The sum of the numbers on each side is to be 15. No number is to be used more than once.



There are several solutions. See how many you can find. Remember the sum of each side is 15.

Did you use column addition in solving the above puzzle?

Number each dot on this triangle with a one-digit number. The sum of each side is 17. No number is to be used more than once.



Row B

26	46	247	549	218	469
57	21	112	123	303	321
<u>+14</u>	<u>+73</u>	<u>+435</u>	<u>+114</u>	<u>+174</u>	<u>+149</u>

Check your answers with page 32.

Answers for page 28:

Row A	881	795	973	871	797	879
Row B	841	689	454	898	742	996

More Column Addition

Find the sums.

Row A

218	621	550	125	426	156
114	114	342	342	327	327
<u>+621</u>	<u>+218</u>	<u>+125</u>	<u>+550</u>	<u>+156</u>	<u>+426</u>

Row B

128	107	108	312	349	454
240	240	498	498	119	119
<u>+107</u>	<u>+128</u>	<u>+312</u>	<u>+108</u>	<u>+454</u>	<u>+349</u>

Row C

256	125	624	209	324	436
541	541	126	126	173	173
<u>+125</u>	<u>+256</u>	<u>+209</u>	<u>+624</u>	<u>+436</u>	<u>+324</u>

Row D

196	245	298	156	279	358
518	518	325	325	256	256
<u>+245</u>	<u>+196</u>	<u>+156</u>	<u>+298</u>	<u>+358</u>	<u>+279</u>

Look at the pairs of problems above. How are they alike?

Does this suggest a way to check addition?

Did it work for every pair?

Subtraction With Zero

You have learned that zero is used to hold a place. For example: the zero in the number 10 shows there are no ones and holds the ones' place.

Let's solve this problem which uses zero to hold the ones' place and to show there are no ones. Use your counters to show how this problem is worked.

$$\begin{array}{r} 250 \\ - 125 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 250 \\ - 125 \\ \hline 125 \end{array}$$

$$\begin{array}{r} 1 \\ 125 \\ + 125 \\ \hline 250 \end{array}$$

1. Zero tells there are no ones. What can you exchange for ones? 1 ten = 10 ones. Exchange one of the five tens. 2 hundred + 5 tens + 0 ones = 2 hundred + 4 tens + 10 ones. 10 minus 5 = 5 ones.

2. Subtract the tens. 4 tens minus 2 tens = 2 tens. Subtract the hundreds. 2 hundreds minus 1 hundred = 1 hundred.

3. Check by adding the subtrahend and difference. 5 ones + 5 ones = 10 ones = 1 ten and 0 ones. 1 ten + 2 tens + 2 tens = 5 tens. 1 hundred + 1 hundred = 2 hundreds.

Subtract and check by adding the subtrahend and difference.

Row A

$$\begin{array}{r} 270 \\ - 137 \\ \hline \end{array}$$

$$\begin{array}{r} 260 \\ - 146 \\ \hline \end{array}$$

$$\begin{array}{r} 430 \\ - 113 \\ \hline \end{array}$$

$$\begin{array}{r} 580 \\ - 351 \\ \hline \end{array}$$

$$\begin{array}{r} 740 \\ - 424 \\ \hline \end{array}$$

$$\begin{array}{r} 920 \\ - 715 \\ \hline \end{array}$$

Row B

$$\begin{array}{r} 340 \\ - 122 \\ \hline \end{array}$$

$$\begin{array}{r} 480 \\ - 228 \\ \hline \end{array}$$

$$\begin{array}{r} 280 \\ - 157 \\ \hline \end{array}$$

$$\begin{array}{r} 990 \\ - 186 \\ \hline \end{array}$$

$$\begin{array}{r} 830 \\ - 411 \\ \hline \end{array}$$

$$\begin{array}{r} 970 \\ - 659 \\ \hline \end{array}$$

Answers for page 30:

Row A	13	14	18	17	12	33	26	30
Row B	97	140	794	786	695	939		

There are several correct solutions to the triangles. Your solution is correct if the sum of the numbers of each side is 15 in the first triangle and 17 in the second triangle and you used no number twice. How many solutions did you find?

More Zeros in Subtraction

Question: What happens when zero is in the tens' place?

$$\begin{array}{r} 205 \\ - 123 \\ \hline \end{array}$$

1. 5 minus 3 = 2 ones.

$$\begin{array}{r} 1 \\ 205 \\ - 123 \\ \hline 82 \end{array}$$

2. Where can you borrow some tens? Remember: 1 hundred = 10 tens. Change 1 of the 2 hundreds for 10 tens. 10 tens minus 2 tens = 8 tens.

3. 1 hundred minus 1 hundred = zero hundreds.

Subtract and check.

$$\begin{array}{r} 508 \\ - 351 \\ \hline \end{array}$$

$$\begin{array}{r} 403 \\ - 113 \\ \hline \end{array}$$

$$\begin{array}{r} 704 \\ - 423 \\ \hline \end{array}$$

$$\begin{array}{r} 206 \\ - 141 \\ \hline \end{array}$$

$$\begin{array}{r} 207 \\ - 136 \\ \hline \end{array}$$

$$\begin{array}{r} 902 \\ - 371 \\ \hline \end{array}$$

Question: What happens when zeros are in both the tens' and ones' places?

$$\begin{array}{r} 19 \\ 200 \\ - 185 \\ \hline 15 \end{array}$$

1. Where can you get ones? There are no tens. Remember: 2 hundreds = 1 hundred and 10 tens; 10 tens = 9 tens + 10 ones. So 2 hundreds = 1 hundred + 9 tens + 10 ones. 10 minus 5 = 5.

2. 9 tens minus 8 tens = 1 ten.

3. 1 hundred minus 1 hundred = zero.

Check: Does $185 + 15 = 200$? _____

Subtract and check.

$$\begin{array}{r} 400 \\ - 157 \\ \hline \end{array}$$

$$\begin{array}{r} 600 \\ - 236 \\ \hline \end{array}$$

$$\begin{array}{r} 300 \\ - 182 \\ \hline \end{array}$$

$$\begin{array}{r} 700 \\ - 496 \\ \hline \end{array}$$

$$\begin{array}{r} 500 \\ - 164 \\ \hline \end{array}$$

$$\begin{array}{r} 900 \\ - 178 \\ \hline \end{array}$$

$$\begin{array}{r} 500 \\ - 341 \\ \hline \end{array}$$

$$\begin{array}{r} 403 \\ - 294 \\ \hline \end{array}$$

$$\begin{array}{r} 706 \\ - 246 \\ \hline \end{array}$$

$$\begin{array}{r} 608 \\ - 189 \\ \hline \end{array}$$

$$\begin{array}{r} 207 \\ - 138 \\ \hline \end{array}$$

$$\begin{array}{r} 702 \\ - 299 \\ \hline \end{array}$$

Did all your answers check?

Let's Review

Here are some facts that you have learned about money. Can you fill in the blanks?

1. A nickel equals _____ cents.
2. A dime equals _____ cents.
3. A quarter equals _____ cents.
4. A half-dollar equals _____ cents.

5. A half-dollar equals _____ dimes.
6. A dime equals _____ nickels.
7. A half-dollar equals _____ quarters.
8. A quarter equals _____ nickels.

Check your answers with page 36.

What is the value of a dollar?

Look at the facts you have learned. You know a half-dollar equals 50 cents. You have learned two halves equal one whole. There are two half-dollars in one dollar.



$$50¢ + 50¢ = 100¢$$

A quarter is one fourth of a dollar. It takes 4 quarters or 4 fourths to equal a whole dollar.



$$25¢ + 25¢ + 25¢ + 25¢ = 100¢$$

1 dollar equals _____ cents.

When we write one dollar, we need a dollar sign—\$. To separate the dollars and cents, we use a cents point which is placed between the dollars and cents.

One dollar and no cents is written \$1.00

There are always two places to the right of the cents point.

One dollar and one cent is written \$1.01

One dollar and ten cents is written \$1.10

Reading Amounts of Money

Draw lines to connect the words and numbers which mean the same amount of money.

- | | |
|--------------------------------------|--------------------------------------|
| 1. four dollars and fifteen cents | \$2.25 |
| 2. five dollars and forty cents | \$6.02 |
| 3. two dollars and twenty-five cents | \$4.15 |
| 4. one dollar and ten cents | \$5.40 |
| 5. six dollars and two cents | \$1.10 |
| 6. \$5.50 | nine dollars and seventy cents |
| 7. \$1.65 | eight dollars and seventy-five cents |
| 8. \$9.70 | six dollars and ninety-nine cents |
| 9. \$6.99 | one dollar and nine cents |
| 10. \$8.75 | one dollar and sixty-five cents |
| 11. \$1.09 | five dollars and fifty cents |

Write these in numbers.

- | | |
|--|-------|
| 12. three dollars and twenty cents | _____ |
| 13. one dollar and fifty-five cents | _____ |
| 14. four dollars and sixty-nine cents | _____ |
| 15. two dollars and forty-seven cents | _____ |
| 16. six dollars and ninety-eight cents | _____ |
| 17. one dollar and three cents | _____ |

Write these in words.

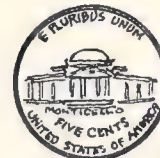
- | | |
|------------|-------|
| 18. \$2.34 | _____ |
| 19. \$7.82 | _____ |
| 20. \$4.04 | _____ |
| 21. \$6.25 | _____ |
| 22. \$8.97 | _____ |
| 23. \$3.30 | _____ |

Check your answers with page 36.

Check your spelling of these words: ten twenty thirty forty
fifty sixty seventy eighty ninety

Problems Using Coins

We use only five different coins.



How quickly can you select the right coins for these problems?
Example: Which of these amounts could be paid using only two different coins?

- a. 49¢ b. 17¢ c. 35¢ d. 53¢ e. 22¢

Answer: c. (a quarter + a dime equals 35¢)

1. Which of these amounts could be paid using only three different coins?

- a. 42¢ b. 54¢ c. 65¢ d. 23¢ e. 37¢

2. Which of these amounts could be paid using only two different coins?

- a. 23¢ b. 75¢ c. 34¢ d. 65¢ e. 45¢

3. Which of these amounts could be paid using only four different coins?

- a. 36¢ b. 49¢ c. 63¢ d. 41¢ e. 53¢

4. Which of these amounts could be paid using only three different coins?

- a. 83¢ b. 96¢ c. 92¢ d. 74¢ e. 76¢

5. Which of these amounts could be paid using only four different coins?

- a. \$1.01 b. 90¢ c. 85¢ d. 95¢ e. \$1.08

Check your answers with page 38.

Answers for page 34:

1. 5 2. 10 3. 25 4. 50 5. 5 6. 2 7. 2 8. 5

Answers for page 35:

- | | | | |
|-----------|--|------------|--|
| 2. \$5.40 | 6. five dollars and fifty cents | 12. \$3.20 | 18. two dollars and thirty-four cents |
| 3. \$2.25 | 7. one dollar and sixty-five cents | 13. \$1.55 | 19. seven dollars and eighty-two cents |
| 4. \$1.10 | 8. nine dollars and seventy cents | 14. \$4.69 | 20. four dollars and four cents |
| 5. \$6.02 | 9. six dollars and ninety-nine cents | 15. \$2.47 | 21. six dollars and twenty-five cents |
| | 10. eight dollars and seventy-five cents | 16. \$6.98 | 22. eight dollars and ninety-seven cents |
| | 11. one dollar and nine cents | 17. \$1.03 | 23. three dollars and thirty cents |

Can You Make Change?

Change For A Dollar

1 dollar = _____ quarters.

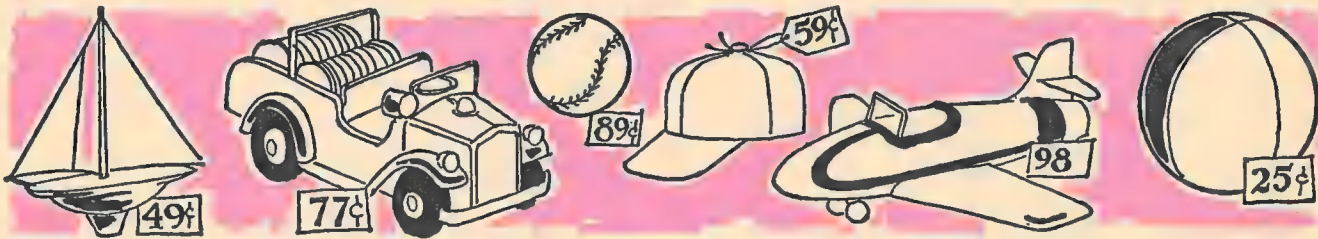
1 dollar = _____ half-dollars.

1 dollar = _____ dimes.

1 dollar = _____ nickels.

1 dollar = 9 dimes + _____ pennies.

What can you buy with a \$1.00?



In each problem, you have \$1.00. How much change will you get?

1. You buy the ship.

$$\begin{array}{r} \$1.00 \\ - .49 \\ \hline .51 \end{array}$$

Remember: \$1.00 = 9 dimes
+ 10 pennies.

Look at the chart below.
This change could be paid using these coins.

2. You buy the baseball.

4. You buy the fire engine.

5. You buy the airplane.

3. You buy the ball.

6. You buy the cap.

Fill in the table. Use the fewest number of coins to make change.

Item	ship	baseball bat	ball	fire engine	airplane	cap
Cost	49¢	89¢	25¢	77¢	98¢	59¢
Amount of Change	51¢					
pennies	1					
nickels						
dimes						
quarters						
half-dollar	1					

Check your answers with page 39.

Adding and Subtracting With Money

Add and check by adding in the opposite direction.

Remember to place the dollar sign and cents point correctly in your answer.

Row A

\$.56 .12 .31 <hr/>	\$.32 .25 .10 <hr/>	\$.42 .28 .17 <hr/>	\$.19 .57 .18 <hr/>	\$1.14 2.59 1.26 <hr/>	\$3.23 1.37 2.28 <hr/>
-------------------------------	-------------------------------	-------------------------------	-------------------------------	---------------------------------	---------------------------------

Row B

\$.28 +.72 <hr/>	\$.37 +.89 <hr/>	\$.75 +.58 <hr/>	\$.89 +.69 <hr/>	\$1.01 +1.69 <hr/>	\$2.28 +1.56 <hr/>
-------------------------	-------------------------	-------------------------	-------------------------	--------------------------	--------------------------

Row C

\$4.18 3.35 1.06 <hr/>	\$1.26 4.22 1.13 <hr/>	\$2.54 3.12 4.22 <hr/>	\$5.18 2.64 1.18 <hr/>	\$5.95 2.31 1.48 <hr/>	\$4.32 1.87 3.79 <hr/>
---------------------------------	---------------------------------	---------------------------------	---------------------------------	---------------------------------	---------------------------------

Subtract and check by adding the subtrahend and difference.

Row D

\$8.56 -2.36 <hr/>	\$7.99 -5.47 <hr/>	\$5.73 -2.35 <hr/>	\$7.74 -5.28 <hr/>	\$8.64 -7.45 <hr/>	\$3.23 -1.18 <hr/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Row E

\$5.37 -1.61 <hr/>	\$4.26 -2.37 <hr/>	\$5.93 -1.85 <hr/>	\$2.95 -1.47 <hr/>	\$3.25 -1.79 <hr/>	\$6.47 -2.68 <hr/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Row F

\$3.00 -1.47 <hr/>	\$5.00 -2.38 <hr/>	\$4.04 -1.42 <hr/>	\$3.00 -1.57 <hr/>	\$7.00 -4.39 <hr/>	\$8.09 -4.54 <hr/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Check your answers with page 40.

Answers for page 36:

1. c. (half-dollar, dime, nickel)
penny)

2. b. (half-dollar, quarter)

3. d. (quarter, dime, nickel,

4. e. (half-dollar, quarter, penny)

5. b. (half-dollar, quarter, dime, nickel)

Adding Numbers of Different Sizes

1. There are 102 third graders, 81 fourth graders and 6 teachers. How many children and teachers are there in both grades? Place the ones, tens, and hundreds in columns. Add.

$$\begin{array}{r}
 \begin{array}{l} \leftarrow 100's \\ \leftarrow 10's \\ \leftarrow 1's \end{array} \\
 102 \\
 81 \\
 + 4 \\
 \hline
 187
 \end{array}$$

2. Jim has 231 marbles, Ted has 40 marbles, and Joe has only 7 marbles. How many marbles do they have altogether?
3. On three pages in arithmetic, Jim had the following number of problems right: 32, 6, and 21. What was his total number of correct problems?
4. The Girl Scouts gave a bake sale. Sally sold 212 cookies, Polly sold 89 cookies, and Susan sold 9 cookies. How many cookies did the three girls sell altogether?

Check your answers with page 40.

Row A Add and check by adding in the opposite direction.

21	156	8	164	33	154
132	11	50	5	160	2
4	2	421	20	6	41
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Row B

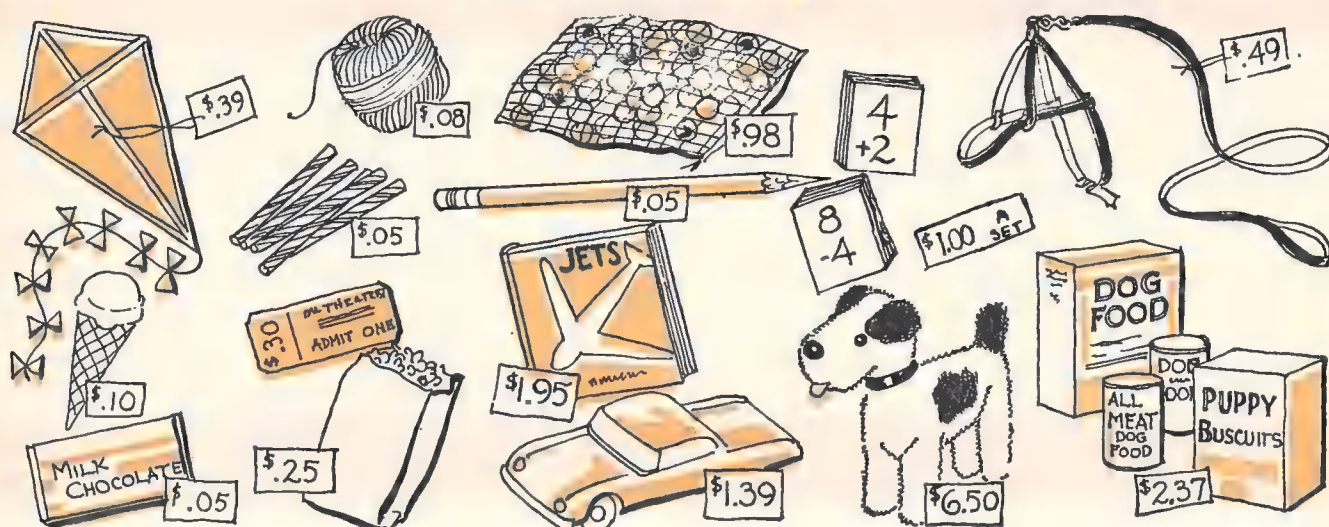
183	17	14	272	431	402
5	1	15	6	27	1
11	940	480	10	1	95
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Answers for page 37:

2. \$.11 change—1 penny, 1 dime
 3. \$.75 change—1 quarter, 1 half-dollar
 4. \$.23 change—2 dimes, 3 pennies

5. \$.02 change—2 pennies
 6. \$.41 change—1 quarter, 1 dime, 1 nickel, and 1 penny

What to Buy?



What will it cost to buy—

1. the marbles, the toy car, and the candy?

\$.98
Find the cost of 1.39
each item. Add. + .05

4. both sets of flashcards, a pencil, and the book on jets.

2. the movie ticket, candy bar, popcorn, and an ice-cream cone?

5. a puppy, a halter, and dog food?

3. the kite, the string, and a candy bar?

6. four things you would like from the above items?

Check your answers with page 42.

Answers for page 38:

Row A	\$.99	\$.67	\$.87	\$.94	\$4.99	\$6.88
Row B	\$1.00	\$1.26	\$1.33	\$1.58	\$2.70	\$3.84
Row C	\$8.59	\$6.61	\$9.88	\$9.00	\$9.74	\$9.98
Row D	\$6.20	\$2.52	\$3.38	\$2.46	\$1.19	\$2.05
Row E	\$3.76	\$1.89	\$4.08	\$1.48	\$1.46	\$3.79
Row F	\$1.53	\$2.62	\$2.62	\$1.43	\$2.61	\$3.55

Answers for page 39:

2. 278 marbles 3. 59 problems 4. 310 cookies

Solving Problems

Pages 41, 42, and 43 review the addition and subtraction problems that you have studied in this book. If you have any trouble with these pages, look again at pages 11-40 which explained problems like these.

Will You Add or Subtract?

Read each problem carefully, decide, then solve the problem on a separate sheet of paper. Write the answer in the blank.

- | | |
|--|---|
| 1. The Boy Scouts bought 396 boxes of cookies to sell. They sold 271 boxes of cookies the first week. How many boxes of cookies were left? _____ boxes | 7. In problem 6, how many more red kites were sold than blue kites? _____ kites |
| 2. Joe's train was 48 inches long and Ted's train was 56 inches long. If they put both trains together, how long would their train be? _____ inches long | 8. Joe wanted to buy a wagon that cost \$5.23. He had saved \$3.75. How much more money did he need? _____ |
| 3. Ted sold 238 apples to the Boy Scouts and 246 apples to the Girl Scouts. How many apples did he sell in all? _____ apples | 9. Jane received \$3.50 for her birthday, \$1.25 for Easter and \$4.75 for Christmas. How much money did Jane have? _____ |
| 4. The Boy Scouts paid \$4.76 for their apples. The Girl Scouts paid \$4.92 for their apples. How much money did Ted make from selling apples? _____ | 10. There are 500 boys and 473 girls in school. How many more boys are there in school than girls? _____ boys |
| 5. Joe paid \$1.35 for a bat and a ball. He sold them to Jim for \$1.50. How much money did Joe make by selling his bat and ball? _____ | 11. Sally used 25 sheets of red paper, 102 sheets of white paper and 8 sheets of green paper to make Christmas decorations. How many sheets of paper were used altogether? _____ sheets |
| 6. The store sold 352 red kites and 286 blue kites. How many kites in all were sold? _____ kites | 12. Ann had \$6.00. She spent \$5.29 for a doll. How much change did she get? _____ |

Check your answers with page 43.

Addition

Add and check.

Row A

$$\begin{array}{r} 36 \\ +76 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ +48 \\ \hline \end{array}$$

$$\begin{array}{r} 67 \\ +57 \\ \hline \end{array}$$

$$\begin{array}{r} 78 \\ +95 \\ \hline \end{array}$$

$$\begin{array}{r} 69 \\ +87 \\ \hline \end{array}$$

$$\begin{array}{r} 79 \\ +68 \\ \hline \end{array}$$

Row B

$$\begin{array}{r} 323 \\ +461 \\ \hline \end{array}$$

$$\begin{array}{r} 438 \\ +521 \\ \hline \end{array}$$

$$\begin{array}{r} 653 \\ +236 \\ \hline \end{array}$$

$$\begin{array}{r} 869 \\ +124 \\ \hline \end{array}$$

$$\begin{array}{r} 438 \\ +353 \\ \hline \end{array}$$

$$\begin{array}{r} 527 \\ +235 \\ \hline \end{array}$$

Row C

$$\begin{array}{r} \$3.86 \\ +4.15 \\ \hline \end{array}$$

$$\begin{array}{r} \$5.97 \\ +1.07 \\ \hline \end{array}$$

$$\begin{array}{r} \$6.87 \\ +2.65 \\ \hline \end{array}$$

$$\begin{array}{r} \$2.48 \\ +5.97 \\ \hline \end{array}$$

$$\begin{array}{r} \$6.37 \\ +3.59 \\ \hline \end{array}$$

$$\begin{array}{r} \$4.89 \\ +4.79 \\ \hline \end{array}$$

Row D

$$\begin{array}{r} 216 \\ 427 \\ +116 \\ \hline \end{array}$$

$$\begin{array}{r} 137 \\ 328 \\ +426 \\ \hline \end{array}$$

$$\begin{array}{r} 215 \\ 359 \\ +224 \\ \hline \end{array}$$

$$\begin{array}{r} 548 \\ 104 \\ +335 \\ \hline \end{array}$$

$$\begin{array}{r} 454 \\ 279 \\ +226 \\ \hline \end{array}$$

$$\begin{array}{r} 379 \\ 188 \\ +334 \\ \hline \end{array}$$

Row E

$$\begin{array}{r} 387 \\ 238 \\ +125 \\ \hline \end{array}$$

$$\begin{array}{r} 155 \\ 274 \\ +183 \\ \hline \end{array}$$

$$\begin{array}{r} 553 \\ 288 \\ +135 \\ \hline \end{array}$$

$$\begin{array}{r} 167 \\ 576 \\ +195 \\ \hline \end{array}$$

$$\begin{array}{r} 495 \\ 287 \\ +167 \\ \hline \end{array}$$

$$\begin{array}{r} 198 \\ 399 \\ +294 \\ \hline \end{array}$$

Row F

$$\begin{array}{r} \$.03 \\ 1.22 \\ +.44 \\ \hline \end{array}$$

$$\begin{array}{r} \$1.54 \\ .42 \\ +.01 \\ \hline \end{array}$$

$$\begin{array}{r} \$1.66 \\ .73 \\ +.49 \\ \hline \end{array}$$

$$\begin{array}{r} \$2.39 \\ .05 \\ +.79 \\ \hline \end{array}$$

$$\begin{array}{r} \$7.56 \\ .47 \\ +.89 \\ \hline \end{array}$$

$$\begin{array}{r} \$7.38 \\ .99 \\ +.74 \\ \hline \end{array}$$

Check your answers with page 45.

Answers for page 40:

1. \$2.42

2. \$.70

3. \$.52

4. \$4.00

5. \$9.36

Subtraction

Subtract and check.

Row A

$$\begin{array}{r} \$4.37 \\ - .23 \\ \hline \end{array}$$

$$\begin{array}{r} \$3.98 \\ - .47 \\ \hline \end{array}$$

$$\begin{array}{r} \$5.69 \\ - .44 \\ \hline \end{array}$$

$$\begin{array}{r} \$6.61 \\ - .59 \\ \hline \end{array}$$

$$\begin{array}{r} \$7.95 \\ - .59 \\ \hline \end{array}$$

$$\begin{array}{r} \$8.23 \\ - .19 \\ \hline \end{array}$$

Row B

$$\begin{array}{r} 487 \\ - 324 \\ \hline \end{array}$$

$$\begin{array}{r} 987 \\ - 463 \\ \hline \end{array}$$

$$\begin{array}{r} 824 \\ - 321 \\ \hline \end{array}$$

$$\begin{array}{r} 984 \\ - 877 \\ \hline \end{array}$$

$$\begin{array}{r} 853 \\ - 737 \\ \hline \end{array}$$

$$\begin{array}{r} 754 \\ - 535 \\ \hline \end{array}$$

Row C

$$\begin{array}{r} 856 \\ - 98 \\ \hline \end{array}$$

$$\begin{array}{r} 642 \\ - 73 \\ \hline \end{array}$$

$$\begin{array}{r} 755 \\ - 69 \\ \hline \end{array}$$

$$\begin{array}{r} 421 \\ - 84 \\ \hline \end{array}$$

$$\begin{array}{r} 538 \\ - 79 \\ \hline \end{array}$$

$$\begin{array}{r} 987 \\ - 98 \\ \hline \end{array}$$

Row D

$$\begin{array}{r} \$5.73 \\ - 3.98 \\ \hline \end{array}$$

$$\begin{array}{r} \$2.87 \\ - 1.99 \\ \hline \end{array}$$

$$\begin{array}{r} \$4.79 \\ - 2.81 \\ \hline \end{array}$$

$$\begin{array}{r} \$6.53 \\ - 4.98 \\ \hline \end{array}$$

$$\begin{array}{r} \$9.43 \\ - 6.75 \\ \hline \end{array}$$

$$\begin{array}{r} \$8.84 \\ - 4.95 \\ \hline \end{array}$$

Row E

$$\begin{array}{r} 410 \\ - 398 \\ \hline \end{array}$$

$$\begin{array}{r} 570 \\ - 264 \\ \hline \end{array}$$

$$\begin{array}{r} 707 \\ - 559 \\ \hline \end{array}$$

$$\begin{array}{r} 800 \\ - 174 \\ \hline \end{array}$$

$$\begin{array}{r} 500 \\ - 156 \\ \hline \end{array}$$

$$\begin{array}{r} 600 \\ - 499 \\ \hline \end{array}$$

Row F

$$\begin{array}{r} \$5.70 \\ - 3.18 \\ \hline \end{array}$$

$$\begin{array}{r} \$6.30 \\ - 4.25 \\ \hline \end{array}$$

$$\begin{array}{r} \$7.01 \\ - 3.73 \\ \hline \end{array}$$

$$\begin{array}{r} \$3.00 \\ - 1.95 \\ \hline \end{array}$$

$$\begin{array}{r} \$5.00 \\ - 2.72 \\ \hline \end{array}$$

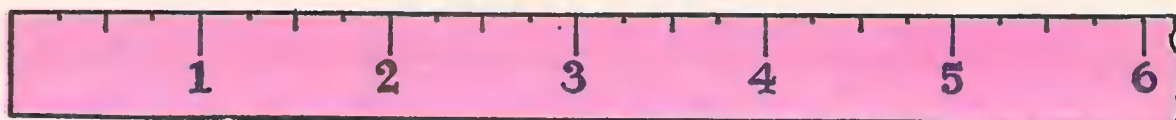
$$\begin{array}{r} \$9.00 \\ - 4.81 \\ \hline \end{array}$$

Check your answers with page 45.

Answers for page 41:

- | | | | | | |
|--------|-----------|-----------|-----------|-----------|------------|
| 1. 125 | 2. 104 | 3. 484 | 4. \$9.68 | 5. \$.15 | 6. 638 |
| 7. 66 | 8. \$1.48 | 9. \$9.50 | 10. 27 | 11. 135 | 12. \$.71 |

Measuring



Look at the above picture of a ruler. How much do you remember about measuring with a ruler?

The smallest division on this ruler is equal to $\frac{1}{4}$ or one quarter of an inch.

$\frac{1}{2}$ or one-half inch = _____ quarters.
1 inch = _____ quarters.

What does each object measure? Write your answer on the blank.

a pin



a button



a stamp



a pencil



Take a foot ruler. Can you find the above measurements of $\frac{1}{2}$, $\frac{1}{4}$, 1, and $3\frac{1}{4}$ inches on your foot ruler? Find these objects in your house and measure them—a book, a pencil, an eraser, a button, and a yardstick.

Which of these objects was the longest? _____

How many inches are there in a yard? _____

How many feet are there in a yard? _____

Measure this train and write the measurement above each car.



Check your answers with page 47.

Making Measurements

Look at a foot ruler and a yardstick and fill in the blanks in the box below.

A foot = _____ inches

A yard = _____ inches

A yard = _____ feet

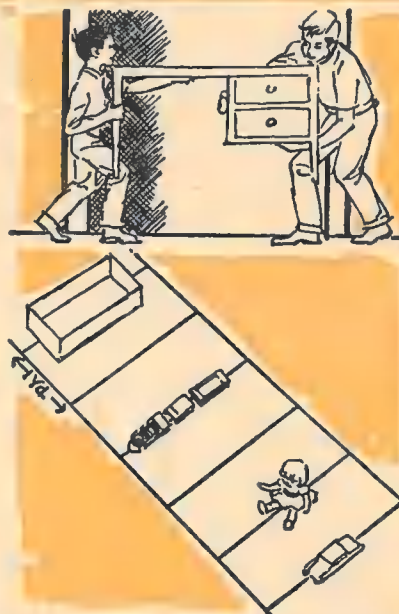
Measure the following to the nearest quarter of an inch.

1. Measure the length of: this page
a table
a reading book
2. Measure the width of: your desk
Mother's baking pan
your bedroom door
3. Measure the height of: a table
your chair
your bedroom door

Measurement	Which was easier to use, the ruler or the yardstick?
11 1/4 ins.	foot ruler

Solve these problems.

1. Ted's father bought a desk for Ted's room. The desk was 27 inches wide. The doorway was a yard wide. Which was wider—the doorway or the desk? How much wider? _____ inches
2. Sally had to take care of her sister, Jane. To keep Jane busy, Sally put three toys and a box on the sidewalk as shown in the picture. The lines on the sidewalk are 1 yard apart. Jane started from the box, picked up the first toy and put it in the box. She did the same with each of her other toys. How far did Jane walk to pick up all three toys? _____ yards



Check your answers with page 47.

Answers for page 42:

Row A	112	102	124	173	156	147
Row B	784	959	889	993	791	762
Row C	\$8.01	\$7.04	\$9.52	\$8.45	\$9.96	\$9.68
Row D	759	891	798	987	959	901
Row E	750	612	976	938	949	891
Row F	\$1.69	\$1.97	\$2.88	\$3.23	\$8.92	\$9.11

Answers for page 43:

Row A	\$4.14	\$3.51	\$5.25	\$6.02	\$7.36	\$8.04
Row B	163	524	503	107	116	219
Row C	758	569	686	337	459	889
Row D	\$1.75	\$.88	\$1.98	\$1.55	\$2.68	\$3.89
Row E	12	306	148	626	344	101
Row F	\$2.52	\$2.05	\$3.28	\$1.05	\$2.28	\$4.19

Measuring Distance



Joe wanted to see how far he traveled from his home to the different places he went. He drew the above map showing the distance in miles between the places. Can you solve the following problems using Joe's map?

1. Joe went from home to the zoo and back. How many miles did he travel? _____ miles.
2. Joe and his father went to a football game. How much farther was it to the football field than it was to the zoo? _____ miles.
3. On a vacation trip, Joe visited his three cousins, Ted, Dick, and Fred. If Joe went from his house to Ted's house, next to Dick's house, then to Fred's house, and then home, how many miles did he travel? _____ miles.
4. How much closer is it from Joe's house to Dick's house than it is from Joe's house to Ted's house? _____ miles.
5. How much farther is it for Joe to go to Fred's house and then to Grandmother's house than it is for Joe to go directly to Grandmother's? _____ miles.
6. Ted is how many miles closer to Fred's house than he is to Joe's house? _____ miles.

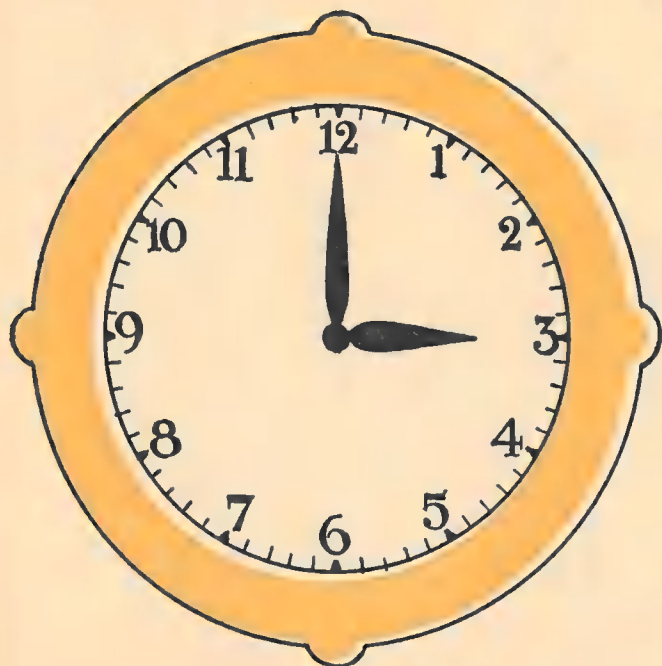
Workspace for above problems. Check your answers with page 48.

1	2	3	4	5	6

How many miles do you travel? Draw a map of the places you go and find out how many miles you travel.

Telling Time

How much do you remember about telling time?



1. What time does this clock show? _____
2. The short hand on the clock is the hour hand. How long will it take the hour hand to move from one number to the next number? _____
3. The long hand is the minute hand. How long will it take the minute hand to move from one number to the next?

4. Count by 5's. How many minutes are there around the clock? _____

What Time Is It?



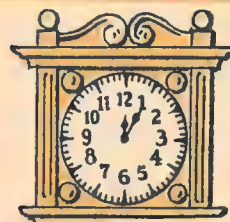
5. _____



6. _____



7. _____



8. _____

9. If this cuckoo clock struck the number of hours each hour of the day, how many times would it strike in 12 hours? _____
10. If another cuckoo clock struck the number of hours each hour of the day, and once every half hour, how many times would it strike in twelve hours? _____



Check your answers with page 49.

Answers for page 44:

1. 2 inches
2. 1 inch
3. $1\frac{1}{4}$ inches
4. $1\frac{1}{2}$ inches
5. $\frac{3}{4}$ inch

Answers for page 45:

- A foot = 12 inches
A yard = 36 inches
A yard = 3 feet
1. Doorway was wider by 9 inches.
 2. 22 yards.

Telling Time to the Nearest Minute

Count the number of minutes in one hour on one of the clocks. There are _____ minutes in one hour. What time is shown on each clock? Put the answer, correct to the nearest minute, in the blanks below.



5:01



Can you solve the following problems?



ON THE AIR



1. Mother wanted to cook an egg 3 minutes. She put the egg on the stove at 7:01. She should take it off at _____. Mark that time on this clock.

2. Joe ran a mile race at school. Fred timed Joe by looking at his wrist watch.

Time started was _____.
Time finished was _____.
How long did it take Joe to run a mile? _____

3. Sally made seven-minute frosting for her cake. If she started to time it at 11:22, the frosting should be done by _____. Mark that time on this clock.

4. The announcer had four minutes to talk on television. If he started at 10:43, he should be finished by _____. Mark that time on this clock.



ON THE AIR



Check your answers with page 50.

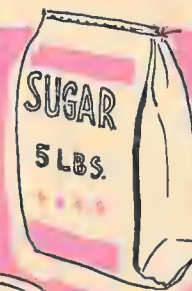
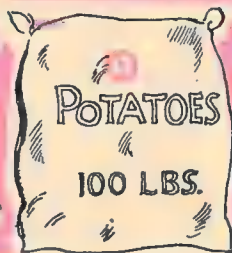
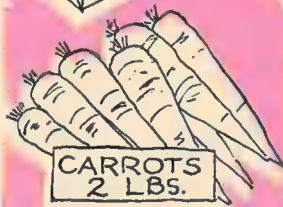
Answers for page 46:

1. 132 miles 2. 134 miles 3. 666 miles 4. 56 miles 5. 347 miles 6. 158 miles

Measuring by the Pound

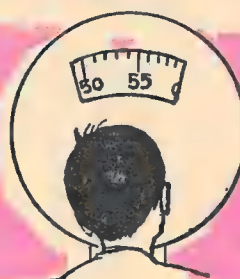
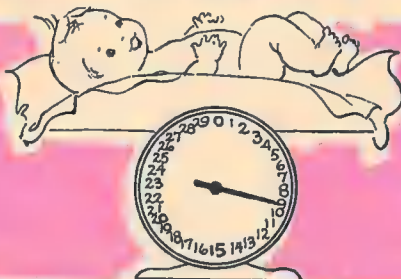
Much of the food you eat is sold by the pound.

Abbreviations used: pound = lb.
weight = wt.



- How much would your groceries weigh if you bought butter, bananas, nuts, and sugar? _____ Could you carry them home? _____
- How much would your groceries weigh if you bought the corn, potatoes, sugar, carrots, and the roast? _____ Could you carry them home? _____

We weigh things on scales to find their weight.



_____ pounds

_____ pounds

_____ pounds

_____ pounds

Read the scales and find how many pounds each weighs.

Weigh yourself on your bathroom scales.

How much do you weigh? _____

Check your answers with page 51.



Answers for page 47:

1. 3 o'clock

2. 1 hour

3. 5 minutes

4. 60 minutes

5. 7 o'clock

6. 8:30 o'clock or half past 8

7. 10:15 o'clock or quarter past 10

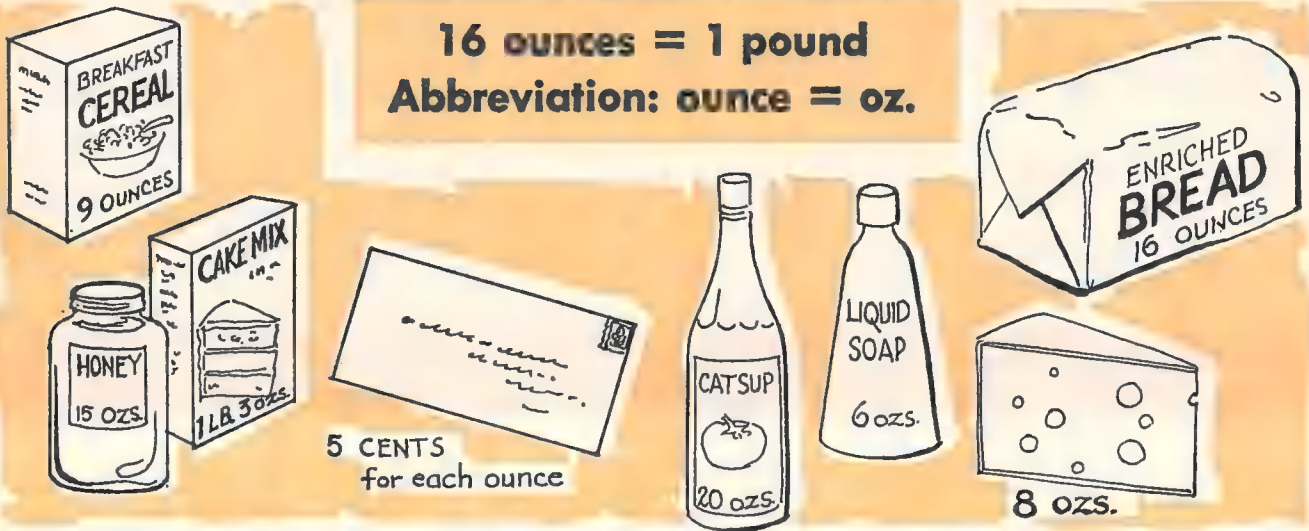
8. 12:05 o'clock or 5 minutes past 12

9. 7 times

10. 90 times

Measuring by the Ounce

Many things that you buy weigh less than a pound. The unit of measurement we use to measure them is the ounce.



Answer the following questions.

1. Which of the above items weighs a pound?
_____ 1 pound = _____ ounces.
2. Which of the above items weighs $\frac{1}{2}$ pound?
_____ $\frac{1}{2}$ pound = _____ ounces.
3. How many ounces does the cake mix weigh?
1 lb. 3 oz. = _____ ounces.
4. How many pounds and ounces does the catsup weigh?
20 ounces = _____ pound _____ ounces.
5. How much more does the honey weigh than the cereal? _____
Which is larger in size? _____ Which is heavier?

6. What would it cost to mail a letter that weighed two ounces?

7. How many ounces would a letter weigh that cost 20 cents to mail? _____

Check your answers with page 52.

Answers for page 48:

60 minutes = 1 hour

5:01 or 1 minute past 5

9:12 or 12 minutes past 9

10:48 or 12 minutes to 11

11:02 or 2 minutes past 11

1. 7:04 or 4 minutes past 7.

2. Time started: 10:10; Time finished 10:18;
8 minutes to run the mile.

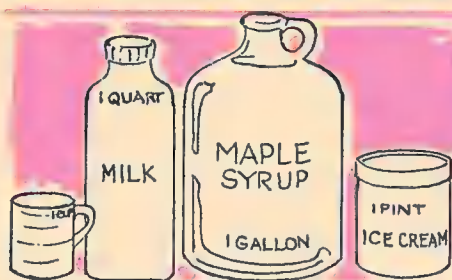
3. 11:29 or 29 minutes past 11.

4. 10:47 or 13 minutes to 11.

Measuring Liquids

Items needed

Where you might find them



a cup
a pint
a quart
a gallon

measuring cup used for baking
pint jar used for canning
quart jar or quart milk container
a gallon milk bottle, a gallon picnic jug, or two half-gallon milk containers

1. Take the pint and the quart. How many times can you pour a pint of water into the quart? _____
_____ pints equal 1 quart (qt.).
2. Take the pint and the cup. How many times can you pour a cupful of water into the pint? _____
_____ cups equal 1 pint (pt.).
3. Take the quart and the gallon. How many times can you pour a quart of water into the gallon? _____
_____ quarts equal 1 gallon (gal.).
4. If you pour two quarts of water from a full gallon of water, how many quarts are left in the gallon? _____ The gallon is $\frac{1}{2}$ full.
_____ quarts equal $\frac{1}{2}$ gallon.
5. If you pour one pint of water from a full quart of water, how many pints are left in the quart? _____ The quart is $\frac{1}{2}$ full.
_____ pint equals $\frac{1}{2}$ quart.
6. If you pour three quarts of water from a full gallon of water, how many quarts are left in the gallon? _____ The gallon is $\frac{1}{4}$ full.
_____ quart equals $\frac{1}{4}$ gallon.
7. If you pour one cup from a full pint of water, how many cups are left in the pint? _____
_____ cup equals $\frac{1}{2}$ pint.
8. If you pour three cups from a full quart of water, how many cups are left in the quart? _____ The quart is $\frac{1}{4}$ full.
_____ cup equals $\frac{1}{4}$ quart.

Check your answers with the chart at the top of page 52.

Answers for page 49:

1. 9 pounds, yes.
2. 115 pounds, no.
2 pounds 9 pounds 54 pounds 7 pounds

Liquid Measure

2 cups equal 1 pint
2 pints equal 1 quart
4 quarts equal 1 gallon

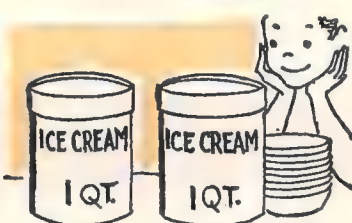
1 cup is $\frac{1}{2}$ of a pint
1 cup is $\frac{1}{4}$ of a quart
1 pint is $\frac{1}{2}$ of a quart
1 quart is $\frac{1}{4}$ of a gallon

In a store, you can usually buy a large container at less cost than the same amount in smaller containers. For example $\frac{1}{2}$ gallon of milk costs less than 2 quarts. Fill in the chart below to show how Mother could get the same amount in a larger container.

Mother bought	She could have bought
1. 4 quarts of milk	_____ gallon
2. 2 pints of ice cream	_____ quart
3. 2 quarts of juice	_____ gallon
4. 4 pints of paint	_____ quarts
5. 8 quarts of syrup	_____ gallons
6. 12 pints of cider	_____ quarts
7. 4 cups of cream	_____ pints
8. 16 cups of ice cream	_____ gallon

Can you solve the problems? Use your cup, pint, quart, and gallon to measure and check your answers.

9. Sally had a party for 14 girls. She had one gallon of punch. If she served each girl 1 cup of punch, how many cups of punch did she have left? _____

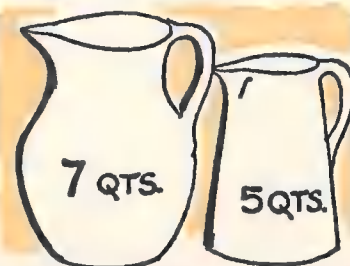


10. Tom bought two quarts of ice cream. He wanted to serve 8 people. How large would each serving be? _____

Hint: How many pints in 2 quarts? _____

How many cups in 4 pints? _____

11. Mother wanted 4 quarts of water to make lemonade. She had only two pitchers. One holds 5 quarts; the other holds 7 quarts. How could she measure 4 quarts using these two pitchers?



Check your answers with page 54.

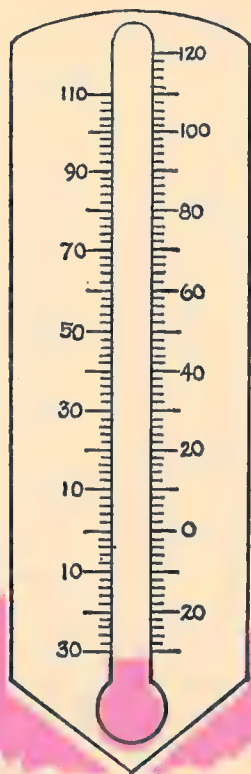
Answers for page 50:

1. Bread, 1 pound = 16 ounces
 2. Cheese, $\frac{1}{2}$ pound = 8 ounces

3. 19 ounces
 4. 1 pound 4 ounces

5. 6 ounces, cereal, honey
 6. 10¢
 7. 4 ounces

The Thermometer



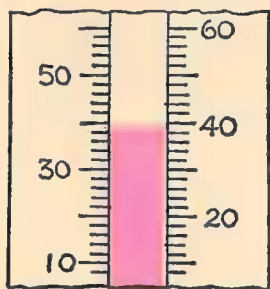
We use the thermometer to measure temperature. Temperature is the degree of heat or cold. A degree can be written as a symbol $^{\circ}$. Example: $70^{\circ} = 70$ degrees.

The liquid in the thermometer moves up when it is warm and down when it is cold.

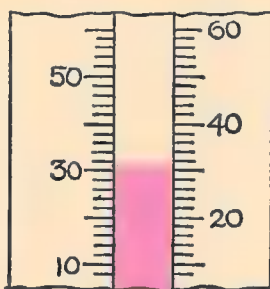
Look at the thermometer on the left side of this page. How many degrees are there between 30° and 40° ? For how many degrees does each division stand? Put your finger on 30° . Now count by 2's— 32° , 34° , 36° , 38° , 40° . Is your finger now on 40° on the thermometer? Each small division between numbers stands for 2 degrees.

Read the temperature in degrees from 54° – 66° ; from 10° below zero to 32° above zero.

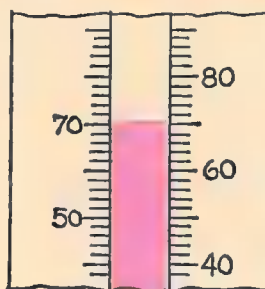
1. Read the temperatures shown on these outdoor thermometers. Write in degrees the temperatures shown on the thermometers.



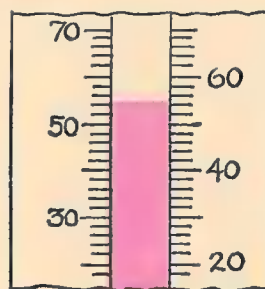
A. _____



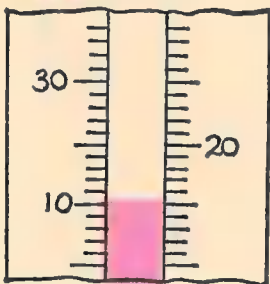
B. _____



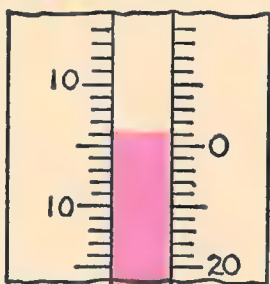
C. _____



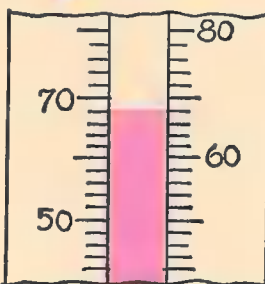
D. _____



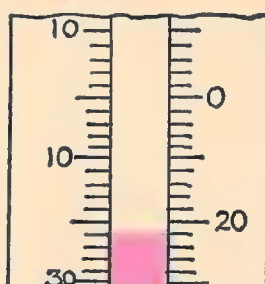
E. _____



F. _____



G. _____



H. _____

2. How many different kinds of thermometers can you find in your home?

Check your answers with page 55.

Reviewing Measurements



Linear Measure

1 foot = _____ inches

1 yard = _____ feet

1 yard = _____ inches

Check your answers with page 45.

Money

A nickel = _____ cents

A dime = _____ cents

A quarter = _____ cents

A half-dollar = _____ cents

A dollar = _____ cents

1 dollar = _____ pennies

1 dollar = _____ nickels

1 dollar = _____ dimes

1 dollar = _____ quarters

1 dollar = _____ half-dollars

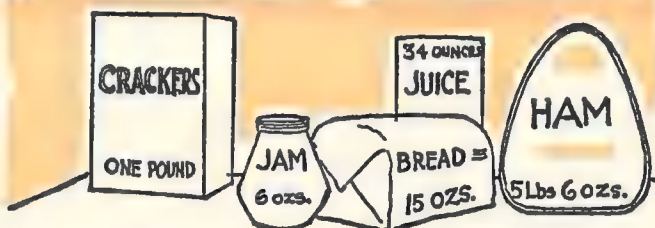
Check your answers with pages 36 and 37.

Weight

1 pound = _____ ounces

$\frac{1}{2}$ pound = _____ ounces

Check your answers with page 50.



Liquid Measure

1 pint = _____ cups

1 quart = _____ pints

1 gallon = _____ quarts

Check your answers with page 52.

Telling Time

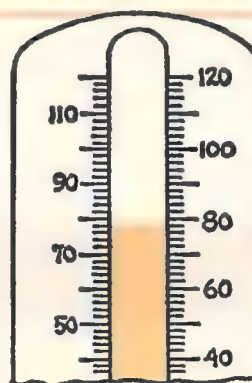


A. _____

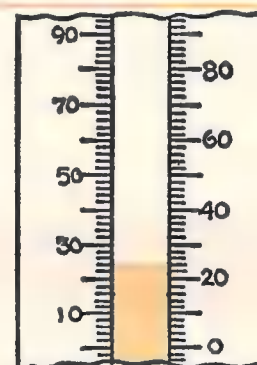


B. _____

Temperature in Degrees



C. _____



D. _____

Check your answers with page 56.

Answers for page 52:

1. 1 gallon
2. 1 quart
3. $\frac{1}{2}$ gallon
4. 2 quarts
5. 2 gallons
6. 6 quarts
7. 2 pints
8. 1 gallon
9. 2 cups
10. 1 cup or $\frac{1}{2}$ pint

11. Take 7 qt. pitcher, fill it and pour into 5 qt. pitcher. Throw water from 5 qt. away. Next put remaining 2 qts. from the 7 qt. pitcher into 5 qt. pitcher. Refill 7 qt. pitcher and pour into 5 qt. pitcher which has space for 3 more qts. Now only 4 qts. are left in the 7 qt. pitcher.

Measurement Problems

1. Sally bought 38 inches of ribbon. Is this more or less than a yard? _____. If she used 29 inches for a belt, how many inches would be left? _____
2. Jim had \$9.00 to spend. If he bought a cap for \$2.49 and a toy car for \$3.98, how much money did he have left? _____
3. Mother wants to buy 8 cups of orange juice. The store sells orange juice in pints, quarts and half-gallons. Which size container should she buy? _____
4. Sally bought 1 pound 12 ounces of candy. Mary bought 19 ounces. Which girl bought more candy? _____ How many more ounces of candy did she buy? _____
5. The high temperature of the day was 70 degrees. The low temperature was 58 degrees. What was the difference between the day's high and low temperature? _____
6. Jane's after school club meets for one hour. It takes Jane a quarter of an hour to walk home. If Jane's club meeting starts at 4:00 o'clock, what time should Jane tell mother she will be home? _____
7. On his vacation trip, John traveled 234 miles, 369 miles, and 259 miles in 3 days. What was the total number of miles John traveled? _____
8. How much money would you have if you had one dollar bill and one each of the five different coins? _____

Work space	
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

Check your answers with page 57. If you have a wrong answer, look at the space where you worked the problem and find what was wrong.

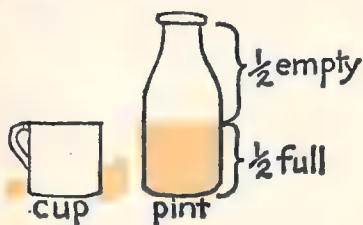
Answers for page 53:

1. a. 40° b. 32° c. 72° d. 56° e. 11° f. 3° g. 69° h. 21° below zero
 2. Oven, Meat, Candy, and Hot Fat Thermometers.

Reviewing What You Know About Fractions

Fill in the blanks with the correct fraction. Measure to check your answers.

1. In measuring liquids you found:



- A cup is $\frac{1}{2}$ of a pint.
- A cup is _____ of a quart.
- A pint is _____ of a quart.
- A quart is _____ of a gallon.

2. In using money you found:

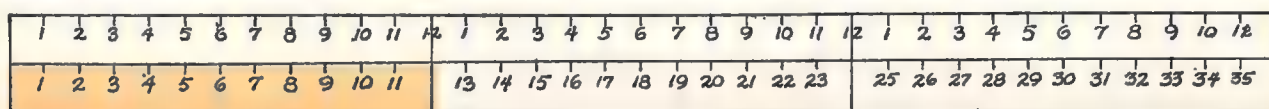
- 50 cents is _____ of a dollar.
- 25 cents is _____ of a dollar.

3. In weighing items you found:

8 ounces is _____ of a pound.

4. In measuring with a yardstick, you found:

1 yard equals 3 feet. What part of a yard is a foot? Look at the yardstick. How many large parts is it divided into? a. _____ Are the parts equal? b. _____ A foot is _____ of a yard. c. _____



5. In telling time you found:

a.



a. 15 minutes is _____ of an hour.

b. 30 minutes is _____ of an hour.

b.



6. Color one part of each square, then write the fraction which tells what part the colored section is of the whole square.

a.



b.



c.



d.



e.



f.



Check your answers with page 58.

Answers for page 54:

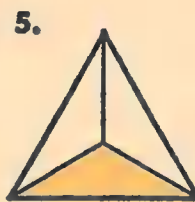
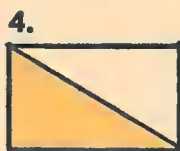
A. 5:26 o'clock or 26 min. past five

B. 2:42 o'clock or 18 min. to 3

C. 78°

D. 24°

What Is the Fraction?



I.

A. Write the numbers of the pictures in which $\frac{1}{2}$ is colored.

B. Write the numbers of the pictures in which $\frac{1}{3}$ is colored.

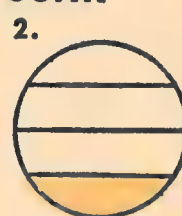
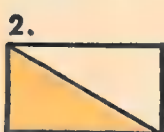
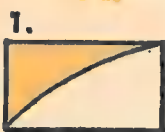
C. Write the numbers of the pictures in which $\frac{1}{4}$ is colored.

II. Put an X on the picture that has the correct part colored.

A. one half

B. one third

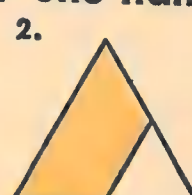
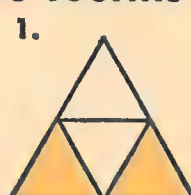
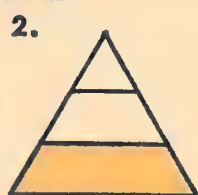
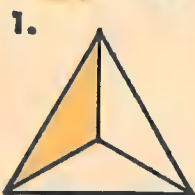
C. one fourth



D. one third

E. one fourth

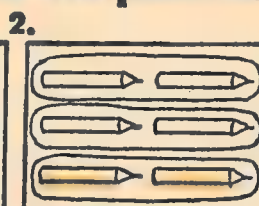
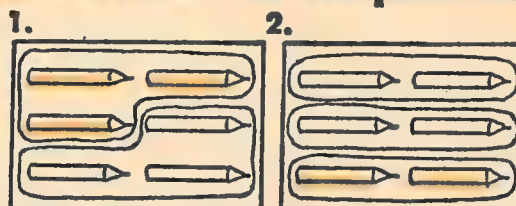
F. two fourths or one half



III. Put an X on the picture that has the correct part of the group colored.

A. one third of the cupcakes.

B. one half of the pencils.



$\frac{1}{3}$ of 9 is _____

$\frac{1}{2}$ of 6 is _____

Check your answers with page 59.

You have learned that when any whole or group is divided into equal parts, each part is a fraction of the whole or the group.

Answers for page 55:

1. more than a yard, 9 inches

2. \$2.53

3. $\frac{1}{2}$ gallon

4. Sally, 9 ounces

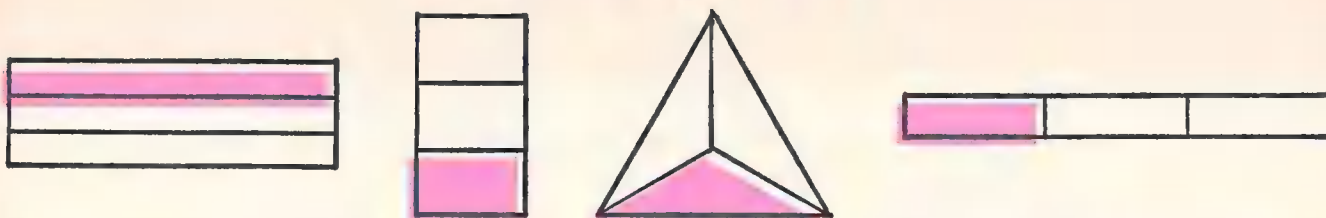
5. 12°

6. 5:15 o'clock or 15 min. past five

7. 862 miles

8. \$1.91

How Many Parts?



1. Look at the above pictures. What part of each picture is colored?
 _____ Let's look at the fraction

$\frac{1}{3}$ number of parts that are colored

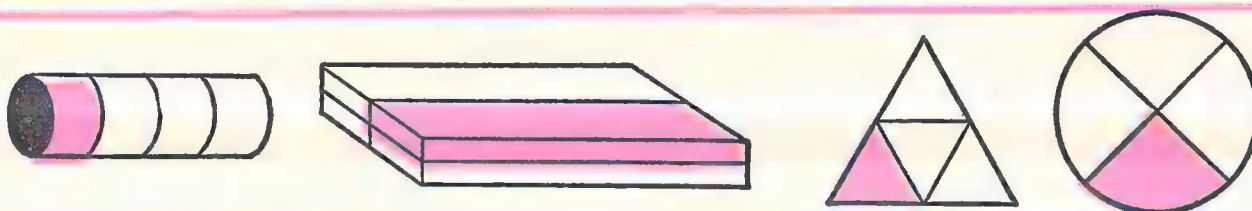
$\frac{3}{3}$ number of equal parts in the whole

Can you write the fraction that would tell how many parts are white? _____ Let's look at the fraction

$\frac{2}{3}$ number of parts that are white

$\frac{3}{3}$ number of equal parts in the whole

2. How many inches are there in $\frac{2}{3}$ of a yard? _____



3. Look at the above pictures. What part of each picture is colored?
 _____ fraction _____? How many parts are not colored?
 _____ What fraction shows how many parts are white? _____

Check your answers with page 60.

Take several different sized sheets of paper. Divide them into four fourths as many different ways as you can. Color $\frac{3}{4}$ of each sheet.

Cut out the following parts on the black lines. Save them to use on page 59.



Answers for page 56:

- | | | | | |
|--------------------------|----------------------------|-----------------------|---------------------|------------------|
| 1. a. $\frac{1}{2}$ pint | 2. a. $\frac{1}{2}$ dollar | 4. a. three parts | 6. a. $\frac{1}{2}$ | d. $\frac{1}{3}$ |
| b. $\frac{1}{4}$ quart | b. $\frac{1}{4}$ dollar. | b. yes | b. $\frac{1}{3}$ | e. $\frac{1}{2}$ |
| c. $\frac{1}{2}$ quart | 3. $\frac{1}{2}$ lb. | c. $\frac{1}{3}$ yd. | c. $\frac{1}{4}$ | f. $\frac{1}{4}$ |
| d. $\frac{1}{4}$ gallon | | 5. a. $\frac{1}{4}$ | | |
| | | b. $\frac{1}{2}$ hour | | |

Comparing Fractions

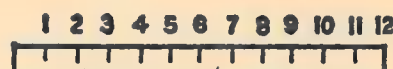
1 whole			
$\frac{1}{2}$		$\frac{1}{2}$	
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

Use the fractional parts you cut out on page 58 and the above chart to help you answer the following questions.

1. Which is more, one half or one third? _____ (Lay the $\frac{1}{3}$ you cut out over the $\frac{1}{2}$ on the chart. Which is longer?)
2. Which is more, one third or one fourth? _____
3. How many thirds equal a whole? _____
4. How many fourths equal a whole? _____
5. How many fourths equal a half? _____
6. Which is more, one half or two thirds? _____
7. Which is more, three fourths or two thirds? _____

Solve these problems.

8. If one fourth of a foot is 3 inches, how many inches are in three fourths of a foot? _____ inches



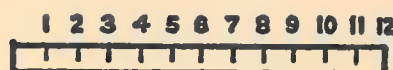
Color $\frac{3}{4}$ of a foot.

9. How many quarts would it take to fill three fourths of a gallon? _____



Color $\frac{3}{4}$ of the quarts.

10. If one third of a foot is 4 inches, how many inches are there in $\frac{2}{3}$ of a foot?



Color $\frac{2}{3}$ of a foot.

Check your answers with page 61.

Answers for page 57:

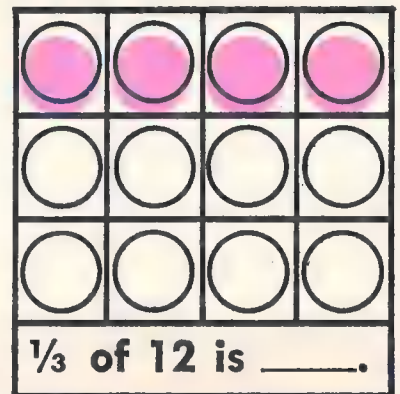
- | | | | |
|------------|----------|------|------------------------------------|
| I. a. 2, 4 | II. a. 2 | d. 1 | III. a. 1, $\frac{1}{3}$ of 9 is 3 |
| b. 3, 5 | b. 1 | e. 1 | b. 1, $\frac{1}{2}$ of 6 is 3 |
| c. 1, 6 | c. 1 | f. 1 | |

What Part of a Group Is It?

Solve these problems.

Draw a picture and color the correct fractional part of each group.

1. Sally found twelve Christmas balls. If she took $\frac{1}{3}$ of them to school, how many did she take to school? _____ balls. When a group is divided into thirds, it means there are three equal parts. Divide the twelve balls into three equal groups. Each of these parts is $\frac{1}{3}$ of the whole group. How many are in one of these parts? $\frac{1}{3}$ of 12 balls equals 4 balls.



2. Tim had six pennies. If he gave $\frac{1}{2}$ of his pennies to Dick, how many pennies did Dick get? (Take six pennies, divide them into two groups—one for Dick, one for Tim until all 6 pennies are in 2 equal groups.) _____ pennies.



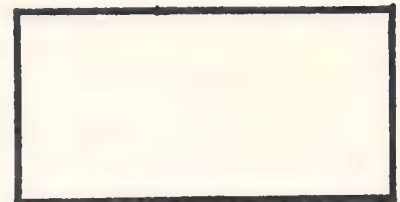
3. Susan has a dozen eggs. She used four eggs in a cake. What fractional part of a dozen did she use in the cake? _____ What fractional part is left? _____



4. Ted had twenty marbles. If he gave one fourth of the marbles to Dick, how many marbles did he give to Dick? _____ How many marbles did Ted keep? _____ What fractional part did he keep? _____



5. If Mother had a dozen cookies and she gave each boy three cookies, how many boys received cookies? _____ What part of the dozen did each boy get? _____



Check your answers with page 62.

Answers for page 58:

1. $\frac{1}{3}$ colored; $\frac{2}{3}$ white

2. 24 inches

3. $\frac{1}{4}$ colored; $\frac{3}{4}$ white

Comparing Groups

A ratio is a fraction that is used to show how two groups or amounts compare in size. Find the ratio which shows the comparison of these groups or amounts.

1. Mary uses 2 cups of water for every 1 cup of oatmeal when she makes hot cereal.
 - a. Write the ratio comparing the amount of water to the amount of oatmeal. _____
 - b. Write the ratio which compares the oatmeal to the water. _____
2. Sally bought 2 candy balls for 3 cents.
 - a. Write the ratio comparing the candy balls to the price. _____
 - b. Write the ratio which compares the price to the candy balls. _____
3. Ted saves 4 cents a week. Mary saves 3 cents a week.
 - a. Write the ratio which compares the amount Ted saves with the amount Mary saves. _____
 - b. Write the ratio which compares the amount Mary saves with the amount Ted saves. _____
4. Mother bought 2 quarts of milk for three boys.
 - a. Write the ratio which compares the quarts of milk with the number of boys. _____
 - b. Write the ratio which compares the number of boys with the quarts of milk. _____



Write the ratio which compares apples to price.



Write the ratio which compares books to pencils.



Write the ratio which compares boys to girls.

Check your answers with page 63.

Answers for page 59:

- | | | | | |
|---------------|------------------|-------------|-----------|--------------|
| 1. one half | 2. one third | 3. three | 4. four | 5. two |
| 6. two thirds | 7. three fourths | 8. 9 inches | 9. 3 qts. | 10. 8 inches |

Ratio or Fractional Part?

For each of the following situations:

1. Write the fraction which describes the situation.
2. Tell whether the fraction is a fractional part of a group or whole, or a ratio which shows the comparison of two groups or amounts.
3. Write the words you would use to read the fraction.
4. Draw a picture of the situation on another piece of paper.

Examples:

Mother cut a pie into 4 equal pieces. She gave one piece to Joe.

$\frac{1}{4}$, fractional part, one fourth

Jim does three problems in arithmetic while Joe does four.

$\frac{3}{4}$, ratio, three to four

1. Ted has three puppies and Mary has four kittens.

2. Sally divided her candy bar into 4 equal pieces. She ate one piece after dinner.

3. Jane wrote two letters while Mary wrote three.

4. Susan bought one yard of ribbon for 4 cents.

5. Mother cut a yard of material into three equal pieces. She used two to make a baby's dress.

6. Ted drinks two pints of milk every day. Jim drinks three pints of milk every day.

7. Joe had 18 baseball cards. He divided them into 3 equal groups. He gave 1 group to John.

8. Dick has 8 shirts. He divided them into two equal groups. One group he gave to his younger brother.

Check your answers with page 64.

Answers for page 60:

- | | | |
|---|---------------------------------------|----------------------------------|
| 1. 4 balls | 2. 3 pennies | 3. $\frac{1}{3}$, $\frac{2}{3}$ |
| 4. 5 marbles, 15 marbles, $\frac{3}{4}$ | 5. 4 boys, $\frac{1}{4}$ of the dozen | |

Getting Ready to Multiply

Count by 2's. 2 4 _____ 12 _____

Count by 5's. 5 10 _____ 35 _____

Count by 1's. 1 2 _____ 5 _____

Add the following numbers.

	2	1	5		$5 + 5 + 5 + 5 + 5 + 5 =$ _____
5	2	1	5	$1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 =$ _____	
5	2	1	5	$2 + 2 + 2 + 2 + 2 + 2 =$ _____	
5	2	1	5	$2 + 2 + 2 + 2 + 2 + 2 + 2 =$ _____	
<u>+5</u>	<u>+2</u>	<u>+1</u>	<u>+5</u>	$5 + 5 + 5 + 5 + 5 + 5 + 5 =$ _____	

How quickly did you add the above numbers? Did you count the number of 1's, 2's, and 5's to find the answer?

Solve this problem.



Ted had 4 packages each containing 2 cupcakes. How many cupcakes did Ted have?

1. Count the cupcakes by two's.

2. Add:
$$\begin{array}{r} 2 \\ 2 \\ 2 \\ 2 \\ \hline +2 \\ \hline \end{array}$$
 or $2 + 2 + 2 + 2 =$ _____

3. How many are four 2's? You could write this problem a short way— $4 \times 2 = 8$, or
$$\begin{array}{r} 2 \\ \times 4 \\ \hline 8 \end{array}$$
 { This short way of adding a number of groups of the same size is called multiplication.





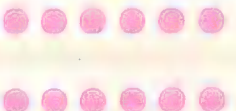



(\times means times in multiplication)

Answers for page 61:

- | | |
|----------------------------|---------------------------|
| 2. a. two to three, $2/3$ | 4. a. two to three, $2/3$ |
| b. three to two, $3/2$ | b. three to two, $3/2$ |
| 3. a. four to three, $4/3$ | 5. $4/3$, four to three |
| b. three to four, $3/4$ | 6. $2/3$, two to three |
| | 7. $3/4$, three to four |

Multiplication by Two

Look at the groups of dots. Fill in the blanks. Read the addition fact and the multiplication fact shown by each grouping. How are the two facts alike?

	Two groups of two each $2 + 2 = 4$	Two 2's are 4 $2 \times 2 = 4$
	$2 + 2 = 2 \times 2$	
	Two groups of three each $3 + \underline{\quad} = \underline{\quad}$	Two 3's are $\underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$
	$3 + 3 = 2 \times \underline{\quad}$	
	Two groups of $\underline{\quad}$ each $\underline{\quad} + \underline{\quad} = \underline{\quad}$	Two $\underline{\quad}$'s are $\underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$
	$4 + 4 = 2 \times \underline{\quad}$	
	Two groups of $\underline{\quad}$ each $\underline{\quad} + \underline{\quad} = \underline{\quad}$	Two $\underline{\quad}$'s are $\underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$
	$5 + 5 = 2 \times \underline{\quad}$	
	Two groups of $\underline{\quad}$ each $\underline{\quad} + \underline{\quad} = \underline{\quad}$	Two $\underline{\quad}$'s are $\underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$
	$6 + 6 = 2 \times \underline{\quad}$	
	Two groups of $\underline{\quad}$ each $\underline{\quad} + \underline{\quad} = \underline{\quad}$	Two $\underline{\quad}$'s are $\underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$
	$7 + 7 = 2 \times \underline{\quad}$	
	Two groups of $\underline{\quad}$ each $\underline{\quad} + \underline{\quad} = \underline{\quad}$	Two $\underline{\quad}$'s are $\underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$
	$8 + 8 = 2 \times \underline{\quad}$	
	Two groups of $\underline{\quad}$ each $\underline{\quad} + \underline{\quad} = \underline{\quad}$	Two $\underline{\quad}$'s are $\underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$
	$9 + 9 = 2 \times \underline{\quad}$	











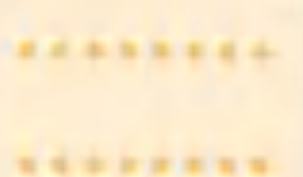

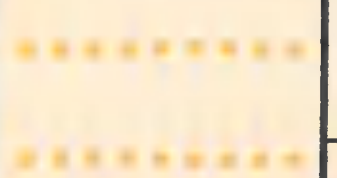

Answers for page 62:

- 3/4, ratio, three to four
- 1/4, fractional part, one fourth
- 2/3, ratio, two to three
- 1/4, ratio, one to four

- 2/3, fractional part, two thirds
- 2/3, ratio, two to three
- 1/3, fractional part, one third
- 1/2, fractional part, one half








More Multiplication

Look at the dots below. How many dots are in each group? Fill in the blanks. Read the multiplication fact shown by each dot picture.

	$3 + 3 = 6$ $2 \times 3 = 6$ $3 + 3 = 2 \times 3 = 6$	$2 + 2 + 2 = \underline{\quad}$ Three 2's = $\underline{\quad}$ $3 \times 2 = \underline{\quad}$	
$2 \times 3 = 3 \times 2$			
	$4 + 4 = 8$ $2 \times 4 = \underline{\quad}$ $4 + 4 = 2 \times 4 = \underline{\quad}$	$2 + 2 + 2 + 2 = \underline{\quad}$ Four 2's = $\underline{\quad}$ $4 \times 2 = \underline{\quad}$	
$2 \times 4 = \underline{\quad} \times \underline{\quad}$			
	$5 + \underline{\quad} = \underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$ $5 + 5 = \underline{\quad}$ $2 \times 5 = \underline{\quad}$	$2 + 2 + 2 + 2 + 2 = \underline{\quad}$ Five $\underline{\quad}$'s = $\underline{\quad}$ $5 \times \underline{\quad} = \underline{\quad}$	
$2 \times 5 = \underline{\quad} \times \underline{\quad}$			
	$\underline{\quad} + \underline{\quad} = \underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$ $6 + 6 = \underline{\quad}$ $\underline{\quad} \times 6 = \underline{\quad}$	$2 + 2 + 2 + 2 + 2 + 2 = \underline{\quad}$ $+ 2 = \underline{\quad}$ Six $\underline{\quad}$'s = $\underline{\quad}$ $6 \times \underline{\quad} = \underline{\quad}$	
$2 \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$			
	$\underline{\quad} + \underline{\quad} = \underline{\quad}$ $2 \times \underline{\quad} = \underline{\quad}$ $7 + 7 = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	$2 + 2 + 2 + 2 + 2 + 2 + 2 = \underline{\quad}$ $+ 2 + 2 = \underline{\quad}$ Seven $\underline{\quad}$'s = $\underline{\quad}$ $7 \times \underline{\quad} = \underline{\quad}$	
$\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$			
	$\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $8 + 8 = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	$2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = \underline{\quad}$ $+ 2 + 2 + 2 = \underline{\quad}$ $\underline{\quad}$ 2's = $\underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	
$\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$			
	$\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	$2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = \underline{\quad}$ $+ 2 + 2 + 2 + 2 = \underline{\quad}$ $\underline{\quad}$ 2's = $\underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	
$\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$			

Multiplication by Three

Look at the pictures below. How many groups are in each picture? How many objects are in each group? Fill in the blanks. Read the multiplication facts.













	Three groups of 3 each $3 + 3 + 3 = 9$	Three 3's are 9 $3 \times 3 = 9$
	$3 + 3 + 3 = 3 \times 3$	
	Three groups of 4 each $4 + 4 + \underline{\quad} = \underline{\quad}$	Three 4's are ____ $3 \times \underline{\quad} = \underline{\quad}$
	$4 + 4 + 4 = 3 \times \underline{\quad}$	
	Three groups of ____ each $5 + \underline{\quad} + 5 = \underline{\quad}$	Three ____'s are ____ $3 \times \underline{\quad} = \underline{\quad}$
	$5 + 5 + 5 = \underline{\quad} \times \underline{\quad}$	
	Three groups of ____ each $6 + \underline{\quad} + \underline{\quad} = \underline{\quad}$	Three ____'s are ____ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$6 + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
	Three groups of ____ each $\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$	Three ____'s are ____ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
	Three groups of ____ each $\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$	Three ____'s are ____ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
	Three groups of ____ each $\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$	Three ____'s are ____ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$	

The parts of a multiplication fact are:

$$\begin{array}{ccccccc}
 2 & \times & 3 & = & 6 & \begin{array}{l} 3 \text{ } \blacktriangleleft \text{ multiplicand} \\ \times 2 \text{ } \blacktriangleleft \text{ multiplier} \\ \hline 6 \text{ } \blacktriangleleft \text{ product} \end{array} \\
 \text{multiplier} & \text{times} & \text{multiplicand} & = & \text{product} &
 \end{array}$$

More Multiplication

Fill in the blanks. Read the multiplication facts shown.

	$4 + 4 + 4 = 12$ $3 \times 4 = 12$ $4 + 4 + 4 =$ $3 \times 4 = 12$	$3 + 3 + 3 + 3 =$ Four 3's = $4 \times 3 =$	
$3 \times 4 = 4 \times 3$			
	$5 + 5 + 5 =$ $3 \times 5 =$ $5 + 5 + 5 =$ $3 \times 5 =$	$3 + 3 + 3 + 3 + 3 =$ Five 3's = $5 \times 3 =$	
$3 \times 5 = \times$			
	$6 + 6 + =$ $3 \times =$ $6 + 6 + 6 =$ $3 \times 6 =$	$3 + 3 + 3 + 3 + 3 + 3 =$ 3's = $\times 3 =$	
$3 \times 6 = \times$			
	$7 + + =$ $\times =$ $7 + 7 + 7 =$ $3 \times 7 =$	$3 + 3 + 3 + 3 + 3 + 3 =$ $+ 3 + 3 =$ 3's = $\times =$	
$\times = \times$			
	$+ + =$ $\times =$ $8 + 8 + 8 =$ $3 \times 8 =$	$3 + 3 + 3 + 3 + 3 + 3 =$ $+ 3 + 3 + 3 =$ 3's = $\times =$	
$\times = \times$			
	$+ + =$ $\times =$ $9 + 9 + 9 =$ $= \times =$	$3 + 3 + 3 + 3 + 3 + 3 + 3 =$ $+ 3 + 3 + 3 =$ 3's = $\times =$	
$\times = \times$			



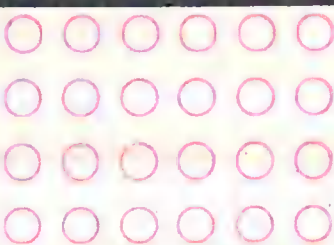

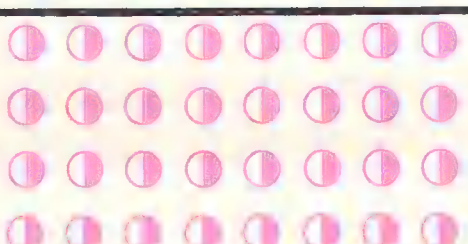
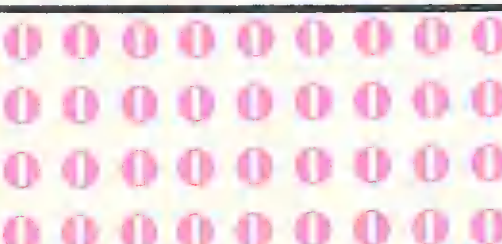
Multiply. Find the product.

$\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$
$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$

Check your answers with page 83.






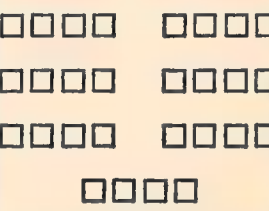




Multiplication by Four

Fill in the blanks. Read the addition fact and the multiplication fact for each picture. How is multiplication like addition?

	<p>Four groups of 4 each</p> <p>$4 + 4 + 4 + 4 = 16$</p>	<p>Four ____'s are 16</p> <p>$4 \times 4 = \underline{\quad}$</p>
$4 + 4 + 4 + 4 = 4 \times 4$		
	<p>Four groups of ____ each</p> <p>$5 + 5 + 5 + 5 = \underline{\quad}$</p>	<p>Four ____'s are ____</p> <p>$4 \times \underline{\quad} = \underline{\quad}$</p>
$5 + 5 + 5 + 5 = \underline{\quad} \times \underline{\quad}$		
	<p>Four groups of ____ each</p> <p>$6 + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$</p>	<p>Four ____'s are ____</p> <p>$\underline{\quad} \times \underline{\quad} = \underline{\quad}$</p>
$6 + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$		
	<p>Four groups of ____ each</p> <p>$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$</p>	<p>Four ____'s are ____</p> <p>$\underline{\quad} \times \underline{\quad} = \underline{\quad}$</p>
$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$		
	<p>Four groups of ____ each</p> <p>$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$</p>	<p>Four ____'s are ____</p> <p>$\underline{\quad} \times \underline{\quad} = \underline{\quad}$</p>
$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$		
	<p>Four groups of ____ each</p> <p>$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$</p>	<p>Four ____'s are ____</p> <p>$\underline{\quad} \times \underline{\quad} = \underline{\quad}$</p>
$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$		

Multiplication is a short way of adding equal groups.

More Multiplication

How many in each group?	Fill in the blanks.	Draw a line around each group of 4.
	$5 + 5 + 5 + 5 = \underline{\quad}$ $4 \times 5 = \underline{\quad}$ $5 + 5 + 5 + 5 = 4 \times 5 = \underline{\quad}$	
	$4 + 4 + 4 + 4 + 4 = \underline{\quad}$ Five 4's = $\underline{\quad}$ $5 \times 4 = \underline{\quad}$ $4 \times 5 = 5 \times 4$	
	$6 + 6 + \underline{\quad} + \underline{\quad} = \underline{\quad}$ $4 \times \underline{\quad} = \underline{\quad}$ $6 + 6 + 6 + 6 = 4 \times \underline{\quad} = \underline{\quad}$	$4 + 4 + 4 + 4 + 4 + 4 = \underline{\quad}$ Six $\underline{\quad}$'s = $\underline{\quad}$ $6 \times \underline{\quad} = \underline{\quad}$
	$4 \times 6 = \underline{\quad} \times \underline{\quad}$	
	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$ $4 \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = 4 \times \underline{\quad} = \underline{\quad}$	$4 + 4 + 4 + 4 + \underline{\quad} + \underline{\quad} = \underline{\quad}$ Seven $\underline{\quad}$'s = $\underline{\quad}$ $7 \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad} = \underline{\quad}$	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$ Eight $\underline{\quad}$'s = $\underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad} = \underline{\quad}$	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$ Nine $\underline{\quad}$'s = $\underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$	

Look at the above pairs of multiplication facts. Is the product the same for each pair of facts? Why?



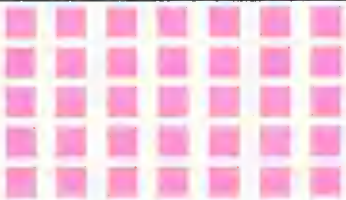

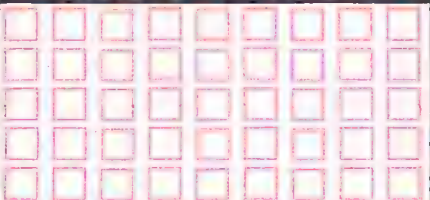
The order in which you multiply numbers makes no difference in multiplication.

Fill in the blanks. Group buttons to show each pair of facts are correct.


1. $2 \times 4 = \underline{\quad} \times 2 = \underline{\quad}$ buttons
2. $4 \times 3 = \underline{\quad} \times \underline{\quad} = \underline{\quad}$ buttons
3. $5 \times 4 = \underline{\quad} \times \underline{\quad} = \underline{\quad}$ buttons

Multiplication by Five



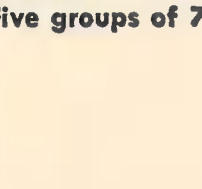

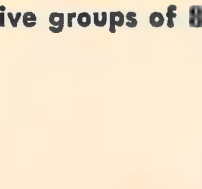

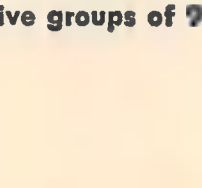
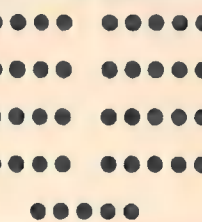
Fill in the blanks. Read the addition and multiplication fact shown by each picture.

	Five groups of ____ each $5 + 5 + \underline{\quad} + \underline{\quad}$ $+ \underline{\quad} = \underline{\quad}$	Five ____'s are ____ $5 \times \underline{\quad} = \underline{\quad}$
	$5 + 5 + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
	Five groups of ____ each $6 + \underline{\quad} + \underline{\quad} + \underline{\quad}$ $+ \underline{\quad} = \underline{\quad}$	Five ____'s are ____ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
	____ groups of ____ each $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad}$ $+ \underline{\quad} = \underline{\quad}$	Five ____'s are ____ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
	____ groups of ____ each $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad}$ $+ \underline{\quad} = \underline{\quad}$	____ 8's are ____ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
	____ groups of ____ each $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad}$ $+ \underline{\quad} = \underline{\quad}$	Five ____'s are ____ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$
	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$	

Draw a picture to show each of these multiplication facts that you have learned. Write the correct product in the blanks.

$4 \times 2 = \underline{\quad}$ 	$2 \times 4 = \underline{\quad}$ $\underline{\quad}$	$3 \times 5 = \underline{\quad}$ $\underline{\quad}$	$5 \times 3 = \underline{\quad}$ $\underline{\quad}$	$4 \times 7 = \underline{\quad}$ $\underline{\quad}$	$7 \times 4 = \underline{\quad}$ $\underline{\quad}$
$9 \times 3 = \underline{\quad}$ $\underline{\quad}$	$3 \times 9 = \underline{\quad}$ $\underline{\quad}$	$8 \times 4 = \underline{\quad}$ $\underline{\quad}$	$4 \times 8 = \underline{\quad}$ $\underline{\quad}$	$6 \times 2 = \underline{\quad}$ $\underline{\quad}$	$2 \times 6 = \underline{\quad}$ $\underline{\quad}$

More Multiplication

Draw the picture.	Fill in the blanks.	Draw a line around each group of 5.
Five groups of 6 	$6 + 6 + 6 + 6 + 6 = \underline{\quad}$ $5 \times 6 = \underline{\quad}$ $6 + 6 + 6 + 6 + 6 = 5 \times 6$ $5 \times 6 = \underline{\quad} \times \underline{\quad}$	
Five groups of 7 	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$ $5 \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = 5 \times \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
Five groups of 8 	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$	
Five groups of 9 	$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \times \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$	

Multiply. Find the correct product.

$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$
$\begin{array}{r} 5 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$
$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$

What is the answer to a multiplication problem called? _____

What sign tells you to multiply? _____

What is it called? _____

Check your answers with page 83.

Multiplying by One

When a number is multiplied by one, the product is the same as the multiplicand.

$$1 \times 1 = 1 \text{ or } \begin{array}{r} 1 \\ \times 1 \\ \hline 1 \end{array}$$

multiplicand product multiplicand product

Find the correct product.

$1 \times 1 = \underline{\quad}$	$1 \times 4 = \underline{\quad}$	$1 \times 7 = \underline{\quad}$
$1 \times 2 = \underline{\quad}$	$1 \times 5 = \underline{\quad}$	$1 \times 8 = \underline{\quad}$
$1 \times 3 = \underline{\quad}$	$1 \times 6 = \underline{\quad}$	$1 \times 9 = \underline{\quad}$

$\begin{array}{r} 3 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 1 \\ \hline \end{array}$
--	--	--	--	--	--	--	--	--

How Many Groups of Ones?

When one is multiplied by a number, the product is the same as the multiplier.

$$1 \times 1 = 1 \text{ or } \begin{array}{r} 1 \\ \times 1 \\ \hline 1 \end{array}$$

multiplier product multiplier product

Find the correct product.

$1 \times 1 = \underline{\quad}$	$4 \times 1 = \underline{\quad}$	$7 \times 1 = \underline{\quad}$
$2 \times 1 = \underline{\quad}$	$5 \times 1 = \underline{\quad}$	$8 \times 1 = \underline{\quad}$
$3 \times 1 = \underline{\quad}$	$6 \times 1 = \underline{\quad}$	$9 \times 1 = \underline{\quad}$

$\begin{array}{r} 1 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 8 \\ \hline \end{array}$
--	--	--	--	--	--	--	--	--

Can you answer these questions?

1. Does the order in which you multiply numbers make any difference in multiplication? _____
2. Multiplication is a short way of adding what kind of groups?

3. What is the answer to a multiplication fact called? _____

Check your answers with page 83.

Ready to Divide

Mother had six cookies. If she gave each boy two cookies, how many boys received cookies?



How many two's are in six? Here are some ways to find out.

1. Draw a line around each group of two cookies. How many two's are there in six? ____

2. Subtract two until all of the cookies are gone. How many two's were subtracted? ____

3. You could write the problem a short way.

$$\begin{array}{r} 3 \\ 2 \overline{)6} \\ \underline{6} \\ 0 \end{array}$$

How many 2's in 6?

Three.

Three 2's make 6.

$6 - 6 = 0$ Check.

$$\begin{array}{r} 6 \\ -2 \\ \hline 4 \\ -2 \\ \hline 2 \\ -2 \\ \hline 0 \end{array}$$

This short way of dividing a group into equal parts is called division.

Look at the problem. What is the name of each part?

$$\begin{array}{c} \text{3 quotient} \\ \text{divisor } 2 \overline{)6} \text{ dividend} \\ \underline{6} \\ 0 \end{array}$$

How was the problem checked?

The quotient times the divisor = dividend

Division problems can be written two ways.

Like this: $2 \overline{)6}^3$

Or like this: $6 \div 2 = 3$

We read the problem: How many 2's in 6? or 6 divided by 2 = ?

Write the name of each part of these division problems. Read each problem.

$$\begin{array}{c} \underline{\hspace{2cm}} \overline{)6}^3 \hspace{1cm} \underline{\hspace{2cm}} \div \hspace{1cm} \underline{\hspace{2cm}} = \hspace{1cm} \underline{\hspace{2cm}} \\ \underline{6} \\ 0 \end{array}$$

Some Rules for Dividing

If you divide any number by one, what will be the answer or the quotient?

Mother had two cookies. She gave one cookie to each boy. How many boys received cookies?

How many 1's are there in 2?



$$\begin{array}{r} 2 \\ -1 \\ \hline 1 \\ -1 \\ \hline 0 \end{array} \quad \left. \begin{array}{l} \swarrow \\ \searrow \end{array} \right\} 2 \text{ 1's}$$

$$\begin{array}{r} 2 \\ 1 \overline{) 2} \\ \underline{2} \\ 0 \end{array} \quad \left\{ \begin{array}{l} 2 \text{ 1's} = 2 \\ 2 \times 1 = 2 \\ 2 - 2 = 0 \end{array} \right. \quad \text{Check}$$

Divide. Check by multiplying.

$$\begin{array}{r} 1 \\ 1 \overline{) 1} \\ \underline{1} \\ 0 \end{array}$$

$$1 \overline{) 3}$$

$$1 \overline{) 4}$$

$$1 \overline{) 5}$$

$$1 \overline{) 6}$$

$$1 \overline{) 7}$$

$$1 \overline{) 8}$$

$$1 \overline{) 9}$$

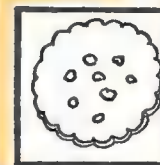
When you divide a number by one, the answer or quotient is the same as the number being divided.

What is the quotient when you divide any number by the same number?

Mother divided three cookies into 3 boxes. How many cookies were in each box?

Divide the cookies into 3 groups.

Three divided by 3 = one $3 \div 3 = 1$
Check: one 3 = 3 $1 \times 3 = 3$



Divide and check.

$$1 \div 1 = \underline{\quad}$$

$$2 \div 2 = \underline{\quad}$$

$$4 \div 4 = \underline{\quad}$$

$$5 \div 5 = \underline{\quad}$$

$$6 \div 6 = \underline{\quad}$$

$$7 \div 7 = \underline{\quad}$$

$$8 \div 8 = \underline{\quad}$$

$$9 \div 9 = \underline{\quad}$$

When a number is divided by the same number, the answer or quotient is one.

Dividing by Two

Solve these problems. Write the correct division fact.

1. A piece of candy cost 2¢. How many pieces of candy can you buy for 6¢? _____. How many 2's in 6? (Subtract to find how many 2's in 6. Write the division fact you have learned. Check by multiplying $3 \times 2 = 6$.)

$$\begin{array}{r} 6\text{¢} \\ -2 \\ \hline 4\text{¢} \\ -2 \\ \hline 2\text{¢} \\ -2 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 3 \\ 2 \overline{)6} \\ \underline{6} \\ 0 \end{array}$$

2. Divide 10 pennies into two equal piles. How many pennies are in each pile? _____ 10 divided by 2 = _____

Find 10 pennies, divide into 2 equal groups. $10 \div 2 = \underline{\hspace{2cm}}$

3. Divide 4 balls equally into 2 boxes. How many balls are in each box? _____

4. Joe has 12¢. How many pieces of gum can he buy for 2¢ each? _____

5. Tom has 16 marbles. If he divided the marbles equally between two boys, how many marbles would each boy have? _____

6. Sally has 14 crayons. If she has the same number of crayons in each of two boxes, how many crayons are in each box? _____

7. There are 8 girls dancing. If every two girls are partners, how many partners are there? _____

8. There are 18 girls playing ball. If they are divided equally into 2 teams, how many girls are on each team? _____

Check your answers with page 77.

Find the quotients.

$2 \div 2 = \underline{\hspace{2cm}}$

$6 \div 2 = \underline{\hspace{2cm}}$

$16 \div 2 = \underline{\hspace{2cm}}$

$4 \div 2 = \underline{\hspace{2cm}}$

$12 \div 2 = \underline{\hspace{2cm}}$

$14 \div 2 = \underline{\hspace{2cm}}$

$8 \div 2 = \underline{\hspace{2cm}}$

$10 \div 2 = \underline{\hspace{2cm}}$

$18 \div 2 = \underline{\hspace{2cm}}$

Dividing by Five

Write the correct division fact for each problem.

1. Sally has 15 pennies. How many nickels could she get for her pennies? _____ (1 nickel = 5 cents. Subtract to find how many 5's in 15 cents. Then write the division fact.)	$\begin{array}{r} 15 \\ -5 \\ \hline 10 \\ -5 \\ \hline 5 \\ -5 \\ \hline 0 \end{array}$ $\begin{array}{r} 1 \\ 2 \\ 3 \end{array}$ $\begin{array}{r} 3 \\ 5 \overline{)15} \\ \underline{15} \\ 0 \end{array}$
2. How many nickels would you get for 25 cents? _____	
3. If Ted bought 5 pieces of gum for 10 cents, how much did each piece of gum cost? _____	
4. Jane divided 30 cookies equally between five girls. How many cookies did each girl have? _____	
5. How many nickels would you get for 20 cents? _____	
6. Sam had 40 sheets of paper. If Sam wanted to make 5 books, how many sheets of paper should he use for each book? _____	
7. How many nickels would you get for 35 cents? _____	
8. Susan had 45 beads. If she wanted to make 5 necklaces, how many beads should she use for each necklace? _____	
Check your answers with page 78.	

Find the quotients.

$$5 \overline{)15}$$

$$35 \div 5 = \underline{\quad}$$

$$40 \div 5 = \underline{\quad}$$

$$5 \overline{)20}$$

$$5 \overline{)25}$$

$$5 \overline{)5}$$

$$5 \div 5 = \underline{\quad}$$

$$15 \div 5 = \underline{\quad}$$

$$5 \overline{)10}$$

$$5 \overline{)30}$$

$$5 \overline{)40}$$

$$5 \overline{)45}$$

$$45 \div 5 = \underline{\quad}$$

$$20 \div 5 = \underline{\quad}$$

Dividing by Three

Write the correct division fact for each problem.

<p>1. Father divided a foot-long board into 3-inch pieces. How many pieces did he have? _____</p> <p>How many 3's in 12? On another piece of paper subtract to find out. $12 \div 3 = \underline{\quad}$ Check. $\underline{\quad} \times 3 = 12$</p>	<p>5. May had 21 flowers. Each flower ring used 3 flowers. How many rings could she make? _____</p>
<p>2. Mother divided 6 pieces of candy equally among 3 boys. How many pieces of candy did each boy receive? $\underline{\quad} 6 \div 3 = \underline{\quad}$ Check. $\underline{\quad} \times 3 = 6$</p>	<p>6. If 27 children were divided into 3 teams of the same size, how many children were on each team? _____</p>
<p>3. Ted had 15 baseball cards. If he divided them equally among 3 boys, how many cards would each boy get? _____</p>	<p>7. Joe had 18 rabbits. If he put 3 rabbits in each cage, how many cages did he have? _____</p>
<p>4. If 9 children stood in 3 equal rows, how many children were in each row? _____</p>	<p>8. Sally made 2 dozen cookies. If she divided them evenly into 3 boxes, how many cookies should be in each box? _____ 1 dozen = 12: How many is 2 dozen?</p>

Find the quotients. Check by multiplying.

$$\begin{array}{r} 1 \\ 3 \overline{) 3} \\ 1 \times 3 = 3 \\ \underline{} \\ 0 \end{array}$$

$3 \overline{) 6}$

$3 \overline{) 12}$

$3 \overline{) 15}$

$3 \overline{) 27}$

$3 \overline{) 24}$

$3 \overline{) 21}$

$3 \overline{) 18}$

$3 \overline{) 3}$

$3 \overline{) 24}$

Check your answers with page 79.

Answers for page 75:

1. $6 \div 2 = 3$
 2. $10 \div 2 = 5$

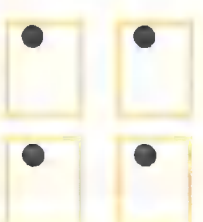
3. $4 \div 2 = 2$
 4. $12 \div 2 = 6$

5. $16 \div 2 = 8$
 6. $14 \div 2 = 7$

7. $8 \div 2 = 4$
 8. $18 \div 2 = 9$

Dividing by Four

Solve these problems. Write the correct division facts.

<p>1. How many quart jars would it take to hold 16 cups of water? _____ 1 quart will hold 4 cups. How many 4's in 16?</p> <p>$4 \overline{)16}$ _____ 4's</p> <div style="position: relative; height: 100px;"> <div style="position: absolute; top: 0; right: 0; text-align: right;"> 16 -4 12 -4 8 -4 4 -4 0 </div> </div>	<p>5. Mother made 32 jars of jam for gifts. If she put 4 jars in each box, how many gift boxes did she have? _____</p>
<p>2. Divide 12 balls equally into 4 boxes. How many balls are in each box? _____ 12 divided by 4 = _____</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> 12 -4 8 -4 4 -4 0 </div> <div style="margin-right: 20px;"> <p>(these balls are in the boxes)</p> <p>(put these in the boxes)</p> <p>(put these in the boxes)</p> </div> <div>  </div> </div>	<p>6. Sally served her guests 28 cookies. If each guest ate 4 cookies, how many guests did Sally have? _____</p>
<p>3. There are 8 boys singing. If there are 4 boys in each row, how many rows of boys are there? _____</p>	<p>7. There are 24 children in the third grade room. If the teacher divided them equally into 4 teams, how many would be on each team? _____</p>
<p>4. Mary has invited 20 children to a party. If she can seat 4 children at each table, how many tables will she need? _____</p>	<p>8. Mother has a yard of ribbon. If she uses 4 inches to make a bow, how many bows can she make? _____</p>

Check your answers with page 79.

Answers for page 76:

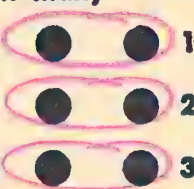
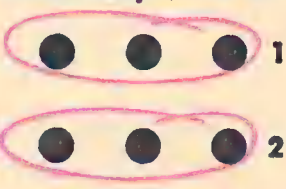
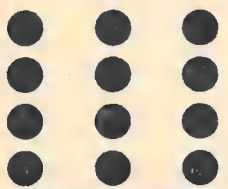

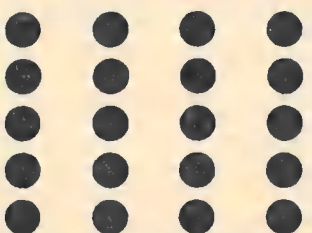







1. $15 \div 5 = 3$
 2. $25 \div 5 = 5$

3. $10 \div 5 = 2$
 4. $30 \div 5 = 6$

5. $20 \div 5 = 4$
 6. $40 \div 5 = 8$

7. $35 \div 5 = 7$
 8. $45 \div 5 = 9$

Dividing by 2, 3, 4, and 5

Draw a line around to find:	Fill in the blanks.	Draw a line around to find:
How many 2's in 6? 	$6 \div 2 = \underline{\quad}$ Check by multiplying. $\underline{\quad} \times 2 = 6$ $6 \div 3 = \underline{\quad}$ $\underline{\quad} \times 3 = 6$ These 4 facts tell how 6 dots were grouped. This group of related facts is called a number family.	How many 3's in 6? 
How many 3's in 12? 	Complete this number family. $12 \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = 12$ $12 \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	How many 4's in 12? 
How many 4's in 20? 	Write the number family for 20. $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	How many 5's in 20? 
How many 2's in 8? 	Write the number family for 8. $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	How many 4's in 8? 
How many 3's in 15? 	Write the number family for 15. $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	How many 5's in 15? 
How many 2's in 10? 	Write the number family for 10. $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$	How many 5's in 10? 

Check your answers with the charts on pages 83 and 84.

Answers for page 77:

- | | | | |
|--------------------|--------------------|--------------------|--------------------|
| 1. $12 \div 3 = 4$ | 3. $15 \div 3 = 5$ | 5. $21 \div 3 = 7$ | 7. $18 \div 3 = 6$ |
| 2. $6 \div 3 = 2$ | 4. $9 \div 3 = 3$ | 6. $27 \div 3 = 9$ | 8. $24 \div 3 = 8$ |

Answers for page 78:

- | | | | | | | | |
|------|------|------|------|------|------|------|------|
| 1. 4 | 2. 3 | 3. 2 | 4. 5 | 5. 8 | 6. 7 | 7. 6 | 8. 9 |
|------|------|------|------|------|------|------|------|

More Division by 2, 3, 4, and 5

Find the quotients. Check by giving a multiplication fact.

1. How many 2's in 12?	$\begin{array}{r} 6 \\ 2 \overline{)12} \\ \underline{12} \\ 0 \end{array}$	$6 \times 2 = 12$
2. How many 3's in 21?		
3. How many 2's in 16?		
4. How many 5's in 30?		
5. How many 4's in 28?		
6. How many 3's in 18?		
7. How many 4's in 24?		
8. How many 2's in 14?		
9. How many 5's in 35?		
10. How many 4's in 36?		
11. How many 2's in 18?		
12. How many 5's in 40?		
13. How many 3's in 24?		
14. How many 4's in 32?		
15. How many 5's in 45?		
16. How many 3's in 27?		

Check your answers with page 83.

Multiplication Facts

Can you find the product of the multiplication facts you have learned? See how fast you can do this.

$\begin{array}{r} 2 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$
$\begin{array}{r} 8 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 6 \\ \hline \end{array}$
$\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 5 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$
$\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 4 \\ \hline \end{array}$
$\begin{array}{r} 4 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$
$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$
$\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$

Name the parts of a multiplication fact.

$$\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$$

_____ or _____ \times _____ = _____

Check your answers with page 83.

Division Facts

Can you find the quotients of the division facts you have learned. See how fast you can do this.

$1/4$	$3/3$	$4/8$	$5/15$	$2/4$	$3/9$	$1/2$	$3/18$	$4/12$
$2/6$	$4/16$	$1/1$	$3/6$	$4/4$	$1/3$	$5/10$	$2/2$	$3/15$
$4/24$	$2/12$	$4/20$	$2/8$	$1/5$	$5/5$	$2/14$	$3/12$	$1/7$
$1/6$	$5/20$	$4/28$	$2/16$	$3/21$	$5/30$	$1/8$	$5/25$	$2/18$
$4/36$	$5/40$	$2/10$	$3/27$	$1/9$	$5/45$	$4/32$	$3/24$	$5/35$

Name the parts of a division fact.

$$\begin{array}{ccccccc} 12 & \div & 3 & = & 4 & \text{ or } & 3 \overline{)12} \\ \hline & \div & & = & & & \end{array}$$

Check your answers with page 84.

Answers for page 80:

1. $12 \div 2 = 6$
 $6 \times 2 = 12$

2. $21 \div 3 = 7$
 $7 \times 3 = 21$

3. $16 \div 2 = 8$
 $8 \times 2 = 16$

4. $30 \div 5 = 6$
 $6 \times 5 = 30$

5. $28 \div 4 = 7$
 $7 \times 4 = 28$

6. $18 \div 3 = 6$
 $6 \times 3 = 18$

7. $24 \div 4 = 6$
 $6 \times 4 = 24$

8. $14 \div 2 = 7$
 $7 \times 2 = 14$

9. $35 \div 5 = 7$
 $7 \times 5 = 35$

10. $36 \div 4 = 9$
 $9 \times 4 = 36$

11. $18 \div 2 = 9$
 $9 \times 2 = 18$

12. $40 \div 5 = 8$
 $8 \times 5 = 40$

13. $24 \div 3 = 8$
 $8 \times 3 = 24$

14. $32 \div 4 = 8$
 $8 \times 4 = 32$

15. $45 \div 5 = 9$
 $9 \times 5 = 45$

16. $27 \div 3 = 9$
 $9 \times 3 = 27$

Multiplication Chart

Use this chart for practice by skipping around, covering up the answer and giving the product.

$\begin{array}{r} 1 \\ \times 1 \\ \hline 1 \end{array}$	$\begin{array}{r} 2 \\ \times 1 \\ \hline 2 \end{array}$	$\begin{array}{r} 3 \\ \times 1 \\ \hline 3 \end{array}$	$\begin{array}{r} 4 \\ \times 1 \\ \hline 4 \end{array}$	$\begin{array}{r} 5 \\ \times 1 \\ \hline 5 \end{array}$	$\begin{array}{r} 6 \\ \times 1 \\ \hline 6 \end{array}$	$\begin{array}{r} 7 \\ \times 1 \\ \hline 7 \end{array}$	$\begin{array}{r} 8 \\ \times 1 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ \times 1 \\ \hline 9 \end{array}$
$\begin{array}{r} 1 \\ \times 2 \\ \hline 2 \end{array}$	$\begin{array}{r} 2 \\ \times 2 \\ \hline 4 \end{array}$	$\begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array}$	$\begin{array}{r} 4 \\ \times 2 \\ \hline 8 \end{array}$	$\begin{array}{r} 5 \\ \times 2 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ \times 2 \\ \hline 12 \end{array}$	$\begin{array}{r} 7 \\ \times 2 \\ \hline 14 \end{array}$	$\begin{array}{r} 8 \\ \times 2 \\ \hline 16 \end{array}$	$\begin{array}{r} 9 \\ \times 2 \\ \hline 18 \end{array}$
$\begin{array}{r} 1 \\ \times 3 \\ \hline 3 \end{array}$	$\begin{array}{r} 2 \\ \times 3 \\ \hline 6 \end{array}$	$\begin{array}{r} 3 \\ \times 3 \\ \hline 9 \end{array}$	$\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$	$\begin{array}{r} 5 \\ \times 3 \\ \hline 15 \end{array}$	$\begin{array}{r} 6 \\ \times 3 \\ \hline 18 \end{array}$	$\begin{array}{r} 7 \\ \times 3 \\ \hline 21 \end{array}$	$\begin{array}{r} 8 \\ \times 3 \\ \hline 24 \end{array}$	$\begin{array}{r} 9 \\ \times 3 \\ \hline 27 \end{array}$
$\begin{array}{r} 1 \\ \times 4 \\ \hline 4 \end{array}$	$\begin{array}{r} 2 \\ \times 4 \\ \hline 8 \end{array}$	$\begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 4 \\ \times 4 \\ \hline 16 \end{array}$	$\begin{array}{r} 5 \\ \times 4 \\ \hline 20 \end{array}$	$\begin{array}{r} 6 \\ \times 4 \\ \hline 24 \end{array}$	$\begin{array}{r} 7 \\ \times 4 \\ \hline 28 \end{array}$	$\begin{array}{r} 8 \\ \times 4 \\ \hline 32 \end{array}$	$\begin{array}{r} 9 \\ \times 4 \\ \hline 36 \end{array}$
$\begin{array}{r} 1 \\ \times 5 \\ \hline 5 \end{array}$	$\begin{array}{r} 2 \\ \times 5 \\ \hline 10 \end{array}$	$\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$	$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$	$\begin{array}{r} 5 \\ \times 5 \\ \hline 25 \end{array}$	$\begin{array}{r} 6 \\ \times 5 \\ \hline 30 \end{array}$	$\begin{array}{r} 7 \\ \times 5 \\ \hline 35 \end{array}$	$\begin{array}{r} 8 \\ \times 5 \\ \hline 40 \end{array}$	$\begin{array}{r} 9 \\ \times 5 \\ \hline 45 \end{array}$
$\begin{array}{r} 1 \\ \times 6 \\ \hline 6 \end{array}$	$\begin{array}{r} 2 \\ \times 6 \\ \hline 12 \end{array}$	$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$	$\begin{array}{r} 4 \\ \times 6 \\ \hline 24 \end{array}$	$\begin{array}{r} 5 \\ \times 6 \\ \hline 30 \end{array}$	<p>The parts of a multiplication problem are:</p> $\begin{array}{rcccl} & 4 & & \text{multiplicand} \\ \text{times} & \times 3 & & \text{multiplier} \\ & 12 & & \text{product} \end{array}$ $\begin{array}{rcccl} 3 & \times & 4 & = & 12 \\ \text{multiplier} & \times & \text{multiplicand} & = & \text{product} \end{array}$ <p>Multiplication is a short way of adding equal groups.</p>			
$\begin{array}{r} 1 \\ \times 7 \\ \hline 7 \end{array}$	$\begin{array}{r} 2 \\ \times 7 \\ \hline 14 \end{array}$	$\begin{array}{r} 3 \\ \times 7 \\ \hline 21 \end{array}$	$\begin{array}{r} 4 \\ \times 7 \\ \hline 28 \end{array}$	$\begin{array}{r} 5 \\ \times 7 \\ \hline 35 \end{array}$				
$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$	$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$	$\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array}$	$\begin{array}{r} 4 \\ \times 8 \\ \hline 32 \end{array}$	$\begin{array}{r} 5 \\ \times 8 \\ \hline 40 \end{array}$				
$\begin{array}{r} 1 \\ \times 9 \\ \hline 9 \end{array}$	$\begin{array}{r} 2 \\ \times 9 \\ \hline 18 \end{array}$	$\begin{array}{r} 3 \\ \times 9 \\ \hline 27 \end{array}$	$\begin{array}{r} 4 \\ \times 9 \\ \hline 36 \end{array}$	$\begin{array}{r} 5 \\ \times 9 \\ \hline 45 \end{array}$				

$3 \times 4 = 4 \times 3 = 12$
 $6 \times 4 = 4 \times 6 = 24$
 $5 \times 9 = 9 \times 5 = 45$
} because order makes no difference in multiplication.

Division Chart

Use this chart for practice by skipping around, covering up the answer and giving the quotient.

$\frac{1}{1/1}$	$\frac{2}{1/2}$	$\frac{3}{1/3}$	$\frac{4}{1/4}$	$\frac{5}{1/5}$	$\frac{6}{1/6}$	$\frac{7}{1/7}$	$\frac{8}{1/8}$	$\frac{9}{1/9}$
$\frac{1}{2/2}$	$\frac{2}{2/4}$	$\frac{3}{2/6}$	$\frac{4}{2/8}$	$\frac{5}{2/10}$	$\frac{6}{2/12}$	$\frac{7}{2/14}$	$\frac{8}{2/16}$	$\frac{9}{2/18}$
$\frac{1}{3/3}$	$\frac{2}{3/6}$	$\frac{3}{3/9}$	$\frac{4}{3/12}$	$\frac{5}{3/15}$	$\frac{6}{3/18}$	$\frac{7}{3/21}$	$\frac{8}{3/24}$	$\frac{9}{3/27}$
$\frac{1}{4/4}$	$\frac{2}{4/8}$	$\frac{3}{4/12}$	$\frac{4}{4/16}$	$\frac{5}{4/20}$	$\frac{6}{4/24}$	$\frac{7}{4/28}$	$\frac{8}{4/32}$	$\frac{9}{4/36}$
$\frac{1}{5/5}$	$\frac{2}{5/10}$	$\frac{3}{5/15}$	$\frac{4}{5/20}$	$\frac{5}{5/25}$	$\frac{6}{5/30}$	$\frac{7}{5/35}$	$\frac{8}{5/40}$	$\frac{9}{5/45}$

The parts of a division problem are:

$$12 \div 3 = 4 \quad \text{or} \quad \begin{array}{r} 4 \text{ quotient} \\ 3 \overline{)12} \end{array}$$

dividend \div divisor = quotient divisor dividend

To check division, multiply the quotient times the divisor. The answer should be the same as the dividend. $4 \times 3 = 12$

Division is used:

1. To measure how many of a given small group are in a larger group of the same kind.

Example: How many 2¢ stamps could Ted buy for 4¢? How many 2's in 4? $4 \div 2 = 2$

2. To divide a large group into a given number of equal groups and find the size of each group.

Example: Jane divides 16 pencils equally into 4 boxes. How many pencils are in each box?
16 divided into 4 equal groups = 4; $16 \div 4 = 4$

Can You Multiply Tens?



Jane has 4 boxes of cookies. There are 20 cookies in each box. How many cookies does Jane have in all?

To solve the problem, you could:

1. Add or 2. Multiply

$$\begin{array}{r} 20 \\ 20 \\ 20 \\ +20 \\ \hline 80 \end{array}$$

$$\begin{array}{r} 2 \text{ tens, no ones} \\ 20 \\ \times 4 \\ \hline 8 \text{ tens, no ones} \\ 80 \end{array}$$

Are the answers the same?

Count the cookies.
How many in all?

Find the answers.

$$\begin{array}{r} 30 \\ 30 \\ +30 \\ \hline \end{array} \quad \begin{array}{r} 3 \text{ tens, no ones} \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 30 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 40 \\ +40 \\ \hline \end{array} \quad \begin{array}{r} 4 \text{ tens, no ones} \\ \times 2 \\ \hline \end{array} \quad \begin{array}{r} 40 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 50 \\ 50 \\ 50 \\ +50 \\ \hline \end{array} \quad \begin{array}{r} 5 \text{ tens, no ones} \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 50 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 40 \\ 40 \\ 40 \\ +40 \\ \hline \end{array} \quad \begin{array}{r} 4 \text{ tens, no ones} \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 40 \\ \times 4 \\ \hline \end{array}$$

Look at the above examples. Can you multiply tens like you multiply ones? What is the difference?

You can multiply tens like you multiply ones except you must use a zero to hold the one's place and to show there are no ones.

Multiply. Find the product. Check by adding on another sheet of paper.

$$\begin{array}{r} 40 \\ \times 2 \\ \hline \end{array} \quad \begin{array}{r} 50 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 60 \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 20 \\ \times 5 \\ \hline \end{array} \quad \begin{array}{r} 40 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 50 \\ \times 5 \\ \hline \end{array} \quad \begin{array}{r} 70 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 80 \\ \times 2 \\ \hline \end{array} \quad \begin{array}{r} 90 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 70 \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 60 \\ \times 5 \\ \hline \end{array} \quad \begin{array}{r} 90 \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 80 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 60 \\ \times 2 \\ \hline \end{array} \quad \begin{array}{r} 70 \\ \times 5 \\ \hline \end{array} \quad \begin{array}{r} 60 \\ \times 3 \\ \hline \end{array} \quad \begin{array}{r} 50 \\ \times 4 \\ \hline \end{array} \quad \begin{array}{r} 90 \\ \times 5 \\ \hline \end{array}$$

Look at the above examples. What was the answer when you multiplied zero by any number? Finish the following sentence.

Zero multiplied by any number equals _____

Multiplying Tens and Ones

You learned on page 85 that zero multiplied by any number equals zero. Now let's look at a problem in which there are both tens and ones.

Dick bought 3 toys. Each toy cost 23¢. How much did all 3 toys cost?

2 dimes, 3 pennies
 $\times 3$

6 dimes, 9 pennies

You can check by adding:

$$\begin{array}{r} 23¢ \\ 23 \\ +23 \\ \hline 69¢ \end{array}$$

1. Multiply the ones first.

$$3 \times 3 = 9$$

2. Multiply the tens.

$$3 \times 2 = 6$$



Multiply. Check by adding on another piece of paper.

Row A

$$\begin{array}{r} 24 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 41 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 53 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 62 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 21 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 51 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 73 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 84 \\ \times 2 \\ \hline \end{array}$$

Row B

$$\begin{array}{r} 31 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 72 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 50 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 22 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 62 \\ \times 4 \\ \hline \end{array}$$

Row C

$$\begin{array}{r} 71 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 92 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 83 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 64 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 62 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 52 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 91 \\ \times 5 \\ \hline \end{array}$$

Row D

$$\begin{array}{r} 82 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 63 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 72 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 92 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 52 \\ \times 4 \\ \hline \end{array}$$

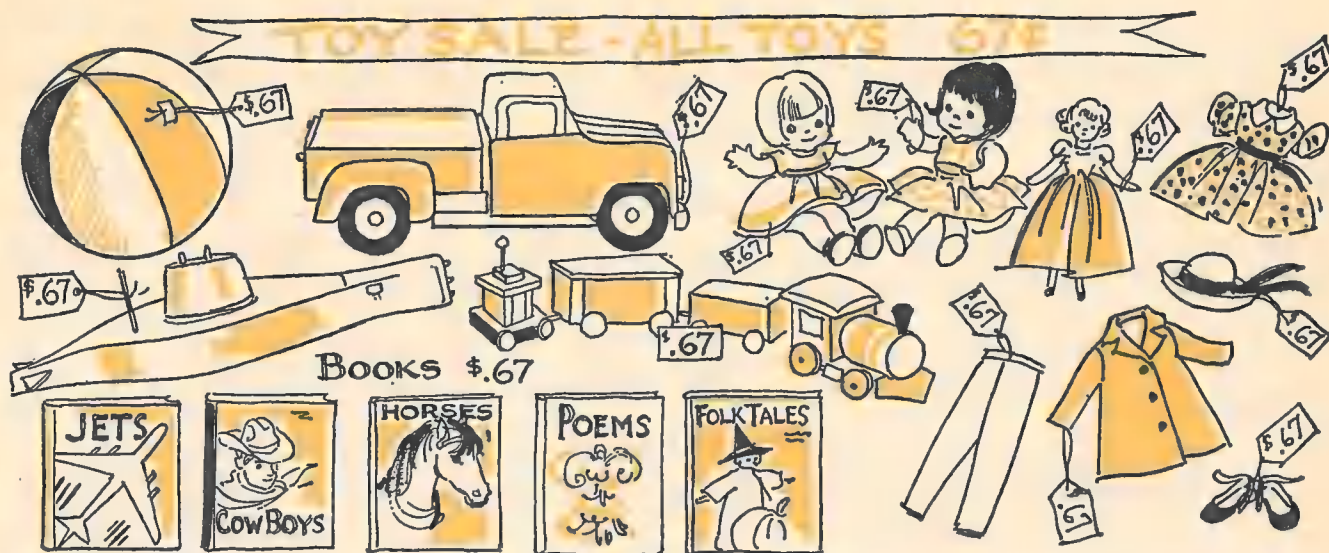
$$\begin{array}{r} 42 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 82 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 73 \\ \times 3 \\ \hline \end{array}$$

Check your answers with page 86.

Toy Sale



The store had a 67¢ sale on all of their dollar toys. Find out how much each of the following people spent at the sale.

Jane bought one doll, a doll's dress, and a doll's hat.

$$\begin{array}{r} \$.67 \\ \times 3 \\ \hline \$2.01 \end{array}$$

Check by adding:

$$\begin{array}{r} \$.67 \\ .67 \\ .67 \\ \hline \$ \end{array}$$

1. Multiply the ones. 3×7 pennies = 21 pennies. (What do you do when you have ten or more pennies? The same as when you added—you would carry.) 21 pennies = 2 dimes + 1 penny. Write the 1 penny. Carry the 2 dimes.

2. Multiply the tens. 3×6 dimes = 18 dimes. 18 dimes + 2 dimes = 20 dimes. 20 dimes = 2 dollars and no dimes. Write the zero to show there are no dimes. Put in the cents point, write the 2 in the dollars place and put in the dollar sign.

1. Dick bought the submarine, the truck, and 3 books.

3. Sally bought a doll's coat, shoes, and slacks.

2. Mother bought the 3 dolls and a book for Christmas.

4. Susan bought the train and the ball.

Check your answers with page 89.

Multiplying

Solve these problems. Check by adding.

1. A store had a 73¢ toy sale. Fill in the chart to show the clerk how much to charge for the toys.

Number of Toys	Cost
1	\$.73
2	
3	
4	
5	

$$\begin{array}{r} \$.73 \\ \times 1 \\ \hline \$.73 \end{array}$$

2. The Girl Scouts sold cookies at 49¢ per box. Complete this girl's chart.

Number of Boxes	Cost
1	
2	
3	
4	
5	

Multiply. Check by adding on another piece of paper.

Row A

$\begin{array}{r} 43 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 25 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 34 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 48 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 57 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 36 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 25 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ \times 4 \\ \hline \end{array}$
---	---	---	---	---	---	---	---	---

Row B

$\begin{array}{r} 52 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 74 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 48 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 86 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 37 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 95 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 78 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 99 \\ \times 5 \\ \hline \end{array}$
---	---	---	---	---	---	---	---	---

Check your answers with page 90.

Answers for page 86:

Row A: 48, 123, 159, 248, 105, 126, 255, 219, 168

Row B: 155, 108, 45, 124, 288, 250, 66, 64, 248

Row C: 284, 305, 368, 249, 128, 355, 186, 208, 455

Row D: 328, 189, 288, 243, 368, 208, 168, 246, 219

Multiplication

Multiply. Find the product.

Row A

$$\begin{array}{r} 50 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 40 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 60 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 70 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 40 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 80 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 90 \\ \times 4 \\ \hline \end{array}$$

Row B

$$\begin{array}{r} 31 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 23 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 82 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 92 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 83 \\ \times 3 \\ \hline \end{array}$$

Row C

$$\begin{array}{r} 54 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 43 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 57 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 64 \\ \times 3 \\ \hline \end{array}$$

Row D

$$\begin{array}{r} 54 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 74 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 66 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 78 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 79 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 87 \\ \times 4 \\ \hline \end{array}$$

Row E

$$\begin{array}{r} 52 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 74 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 49 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 53 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 36 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ \times 8 \\ \hline \end{array}$$

Row F

$$\begin{array}{r} \$.88 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} \$.45 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} \$.99 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} \$.42 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} \$.89 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} \$.34 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} \$.97 \\ \times 3 \\ \hline \end{array}$$

Check your answers with page 91.

Answers for page 87:

1. \$3.35 2. \$2.68 3. \$2.01 4. \$1.34

Remainders in Division

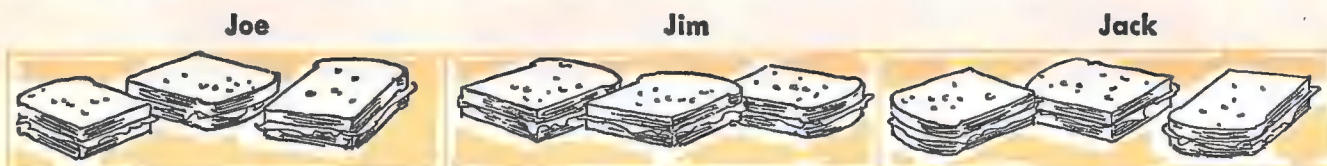
Joe, Jim, and Jack went camping together. Here is a list of the food they took with them.

- 10 sandwiches
- 8 carrot sticks
- 7 cupcakes
- 5 apples
- 1 quart of milk



What was each boy's share of the food?

1. Divide 10 sandwiches into 3 parts.



one left over



How many sandwiches are in each part? _____

How many sandwiches were left? _____ Divide this one into thirds.

Each boy had _____ whole sandwiches and _____ of the one that was left.

$$\begin{array}{r} 3\frac{1}{3} \\ 3 \overline{)10} \\ \underline{9} \\ 1 \end{array}$$

What is left is expressed as a fraction because it can be divided into usable parts.

2. Divide the 8 carrot sticks into 3 equal parts.

How many would each boy get? Draw a picture on another sheet of paper.

3. Divide the 7 cupcakes among the 3 boys.

How many would each get? Draw a picture on another sheet of paper.

4. Divide the 5 apples among the 3 boys.

How many would each get? Draw a picture on another sheet of paper.

5. How many cups of milk will each boy get?

Draw a picture on another sheet of paper.

Check your answers with page 92.

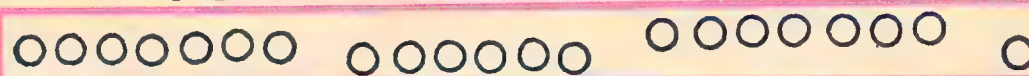
Answers for page 88:

1. \$.73, \$1.46, \$2.19, \$2.92, \$3.65 2. \$.49, \$.98, \$1.47, \$1.96, \$2.45
 Row A: 172, 75, 136, 48, 240, 228, 108, 125, 52
 Row B: 260, 222, 192, 430, 74, 380, 189, 156, 495

How Many Are Left?

Three boys divide 22 marbles among themselves. How many marbles did each boy get? Are there any marbles left over?

$$\begin{array}{r} 7 \text{ R } 1 \\ 3 \overline{)22} \\ \underline{21} \\ 1 \end{array}$$



(Can you divide a marble? No. Write the remainder as R 1, because you can not divide what is left over into usable parts.)

Find the answers. Write the remainders as R followed by the number left over. The first example is done for you.

$$\begin{array}{r} 8 \text{ R } 1 \\ 3 \overline{)25} \\ \underline{24} \\ 1 \end{array}$$

Think!

How many 3's in 25?

Subtract to find out, or think of the number closest to 25 that has an even number of 3's—24.

How many 3's in 24? 8 How many left? R 1

Row A

$$3 \overline{)25} \quad 3 \overline{)17} \quad 5 \overline{)31} \quad 4 \overline{)18} \quad 2 \overline{)13} \quad 5 \overline{)23} \quad 5 \overline{)48}$$

Row B

$$2 \overline{)19} \quad 3 \overline{)23} \quad 5 \overline{)41} \quad 4 \overline{)30} \quad 2 \overline{)11} \quad 3 \overline{)13} \quad 4 \overline{)26}$$

Row C

$$4 \overline{)34} \quad 5 \overline{)39} \quad 3 \overline{)26} \quad 4 \overline{)31} \quad 3 \overline{)29} \quad 2 \overline{)15} \quad 5 \overline{)49}$$

Check your answers with page 93.

Answers for page 89:

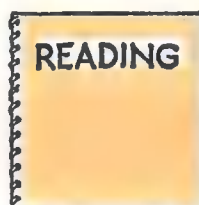
Row A:	100,	120,	120,	210,	200,	240,	360
Row B:	124,	46,	32,	328,	305,	368,	249
Row C:	216,	210,	288,	172,	129,	114,	192
Row D:	270,	344,	370,	198,	390,	237,	348
Row E:	312,	222,	196,	371,	360,	180,	256
Row F:	\$2.64,	\$4.05,	\$1.98,	\$2.94,	\$4.45,	\$2.04,	\$2.91

Dividing Tens

Can you divide tens as you divided ones? Let's look at the problems below.

Use dimes or buttons to represent tens to help you solve these problems.

1. Ted bought 4 notebooks for 80 cents. How much did each notebook cost? _____



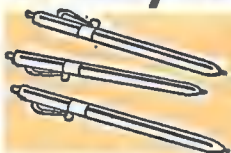
Take 8 dimes. Lay them on the notebooks until the 8 are equally divided on the 4 notebooks. Each notebook cost _____.

$$80 \div 4 = \underline{\hspace{2cm}}$$

$$\begin{array}{r} 20\text{¢} \\ 4 \overline{)80\text{¢}} \\ \underline{80} \\ 0 \end{array}$$

$$\begin{array}{r} 20\text{¢} \\ \times 4 \\ \hline 80\text{¢} \end{array}$$

2. Sally bought 3 pens for 90¢. How much did each pen cost? _____



$$90 \div 3 = \underline{\hspace{2cm}}$$

$$3 \overline{)90}$$

Multiply to check.

Yes, you can divide tens as you did ones, but you need a zero as a place holder to show there are no ones.

3. Divide. Check by multiplying.

$$3 \overline{)60}$$

$$2 \overline{)40}$$

$$3 \overline{)90}$$

$$4 \overline{)80}$$

$$5 \overline{)50}$$

$$1 \overline{)70}$$

$$8 \overline{)80}$$

4. Look at the above examples, what was the answer each time you divided zero ones by any number? _____

Complete this sentence. Zero divided by any number = _____

Check your answer with page 94.

Answers for page 90:

2. $2\frac{2}{3}$ carrot sticks

3. $2\frac{1}{3}$ cupcakes

4. $1\frac{2}{3}$ apples

5. $1\frac{1}{3}$ cups of milk

Dividing Tens and Ones

Find the quotient.

$$\begin{array}{r} 11 \\ 5 \overline{)55} \\ \underline{50} \\ 5 \\ \underline{5} \\ 0 \end{array}$$

Check: $\begin{array}{r} 11 \\ \times 5 \\ \hline 55 \end{array}$

1. Divide the number of tens. $5 \text{ tens} \div 5 = 1 \text{ ten}$. Write 1 ten in the tens' place.

1 ten $\times 5 = 50$. Write the 50 under the 55. Subtract.

$$\begin{array}{r} 55 \\ -50 \\ \hline 5 \end{array}$$

2. Divide the number of ones. $5 \div 5 = 1$
 $1 \times 5 = 5$



Row A

$2 \overline{)82}$

$3 \overline{)39}$

$4 \overline{)48}$

$3 \overline{)63}$

$4 \overline{)84}$

$2 \overline{)44}$

$2 \overline{)28}$

Row B

$2 \overline{)46}$

$2 \overline{)68}$

$4 \overline{)44}$

$2 \overline{)88}$

$3 \overline{)96}$

$4 \overline{)88}$

$3 \overline{)99}$

Check your answers with page 95.

What happens when you have a ten or more left after you have divided the tens?

$$\begin{array}{r} 27 \\ 2 \overline{)54} \\ \underline{40} \\ 14 \\ \underline{14} \\ 0 \end{array}$$

1. Divide the tens. $5 \text{ tens} \div 2 = 2 \text{ tens} + 1 \text{ ten left over}$. $2 \text{ tens} \times 2 = 40$. Write the 40 under the 54 and subtract. The remaining ten + 4 ones = 14 ones.

2. Divide the ones. $14 \div 2 = 7$ $7 \times 2 = 14$.

Check: $\begin{array}{r} 27 \\ \times 2 \\ \hline 54 \end{array}$

$2 \times 7 = 14$ Write the 4, carry the 1 ten.
 $2 \times 2 \text{ tens} = 4 \text{ tens}$. $4 \text{ tens} + 1 \text{ ten} = 5 \text{ tens}$.

Answers for page 91:

Row A: 8 R1, 5 R2, 6 R1, 4 R2, 6 R1, 4 R3, 9 R3

Row B: 9 R1, 7 R2, 8 R1, 7 R2, 5 R1, 4 R1, 6 R2

Row C: 8 R2, 7 R4, 8 R2, 7 R3, 9 R2, 7 R1, 9 R4

Division

Find the quotient. Check by multiplying.

1. $\begin{array}{r} 16 \\ 2 \overline{)32} \\ \underline{20} \\ 12 \\ \underline{12} \\ 0 \end{array}$	Check $\begin{array}{r} 16 \\ \times 2 \\ \hline 32 \end{array}$	2. $3 \overline{)54}$	Check	3. $2 \overline{)74}$	Check
4. $5 \overline{)65}$		5. $2 \overline{)56}$		6. $4 \overline{)68}$	
7. $4 \overline{)64}$		8. $3 \overline{)42}$		9. $5 \overline{)90}$	
10. $2 \overline{)36}$		11. $5 \overline{)85}$		12. $4 \overline{)72}$	
13. $3 \overline{)75}$		14. $4 \overline{)92}$		15. $2 \overline{)78}$	
16. $5 \overline{)95}$		17. $2 \overline{)96}$		18. $3 \overline{)84}$	

Check your answers with page 96.

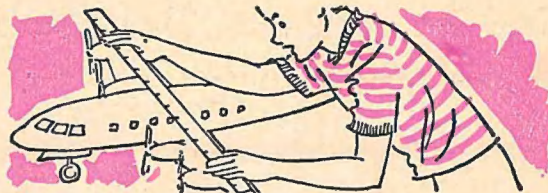
Answers for page 94:

1. 20¢ 2. 30¢ 3. 20, 20, 30, 20, 10, 70, 10
 4. Zero divided by any number is zero.

Review

1. How many inches are there in:

- a. one yard? _____
- b. one-third of a yard? _____
- c. three-fourths of a yard? _____



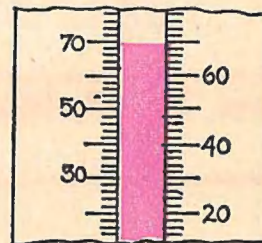
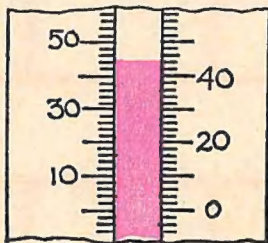
2. How many glasses of milk can Mother pour from:

- a. a quart? _____
- b. a half-gallon? _____
- c. two gallons? _____



3. Susan bought $\frac{1}{4}$ pound of candy. Jane bought 6 ounces of candy. Which girl bought more candy? _____ How much more candy did she buy? _____

4. Read the following times and temperatures.



At _____ the temperature was _____. At _____ the temperature was _____.

5. Tom bought a boat for \$2.98, a ball for \$.49 and gum for \$.05. How much did he spend? _____ He gave the clerk a five dollar bill. How much change should he get back? _____

6. Tom lived 257 miles from his Grandmother. How far would Tom travel if he went to his Grandmother's house and then back home? _____

7. Take any number you want. Multiply by the number of quarts in a gallon, add the number of inches in a foot, then divide by the number of cups in a quart. Now subtract the number you started with. Your answer is _____. (Try several numbers. Is your answer always the same?)

Check your answers with page 96.

Answers for page 93:

Row A: 41, 13, 12, 21, 21, 22, 14

Row B: 23, 34, 11, 44, 32, 22, 33

Review Problems

Use the checking square to check your answers for Rows 1-3.

Row 1—Add

Across			D E F			Down		
A $\begin{array}{r} 58 \\ +67 \\ \hline \end{array}$	B $\begin{array}{r} 96 \\ +78 \\ \hline \end{array}$	C $\begin{array}{r} 120 \\ +463 \\ \hline \end{array}$	A			D $\begin{array}{r} 57 \\ +58 \\ \hline \end{array}$	E $\begin{array}{r} 129 \\ +149 \\ \hline \end{array}$	F $\begin{array}{r} 168 \\ +375 \\ \hline \end{array}$
			B					
			C					

Row 2—Add

Across			D E F			Down		
A $\begin{array}{r} 454 \\ 246 \\ +129 \\ \hline \end{array}$	B $\begin{array}{r} 569 \\ 178 \\ +189 \\ \hline \end{array}$	C $\begin{array}{r} 376 \\ 185 \\ +153 \\ \hline \end{array}$	A			D $\begin{array}{r} 238 \\ 369 \\ +290 \\ \hline \end{array}$	E $\begin{array}{r} 28 \\ 196 \\ + 7 \\ \hline \end{array}$	F $\begin{array}{r} 869 \\ 87 \\ + 8 \\ \hline \end{array}$
			B					
			C					

Row 3—Multiply

Across			D E F			Down		
A $\begin{array}{r} 56 \\ \times 2 \\ \hline \end{array}$	B $\begin{array}{r} 43 \\ \times 3 \\ \hline \end{array}$	C $\begin{array}{r} 46 \\ \times 5 \\ \hline \end{array}$	A			D $\begin{array}{r} 28 \\ \times 4 \\ \hline \end{array}$	E $\begin{array}{r} 41 \\ \times 3 \\ \hline \end{array}$	F $\begin{array}{r} 58 \\ \times 5 \\ \hline \end{array}$
			B					
			C					

Row 4—Subtract (Check by adding.)

$\begin{array}{r} 598 \\ -67 \\ \hline \end{array}$	$\begin{array}{r} 487 \\ -59 \\ \hline \end{array}$	$\begin{array}{r} 857 \\ -132 \\ \hline \end{array}$	$\begin{array}{r} 864 \\ -197 \\ \hline \end{array}$	$\begin{array}{r} 936 \\ -389 \\ \hline \end{array}$	$\begin{array}{r} 721 \\ -398 \\ \hline \end{array}$	$\begin{array}{r} 764 \\ -588 \\ \hline \end{array}$
---	---	--	--	--	--	--

Row 5—Divide (Check your answers by multiplying.)

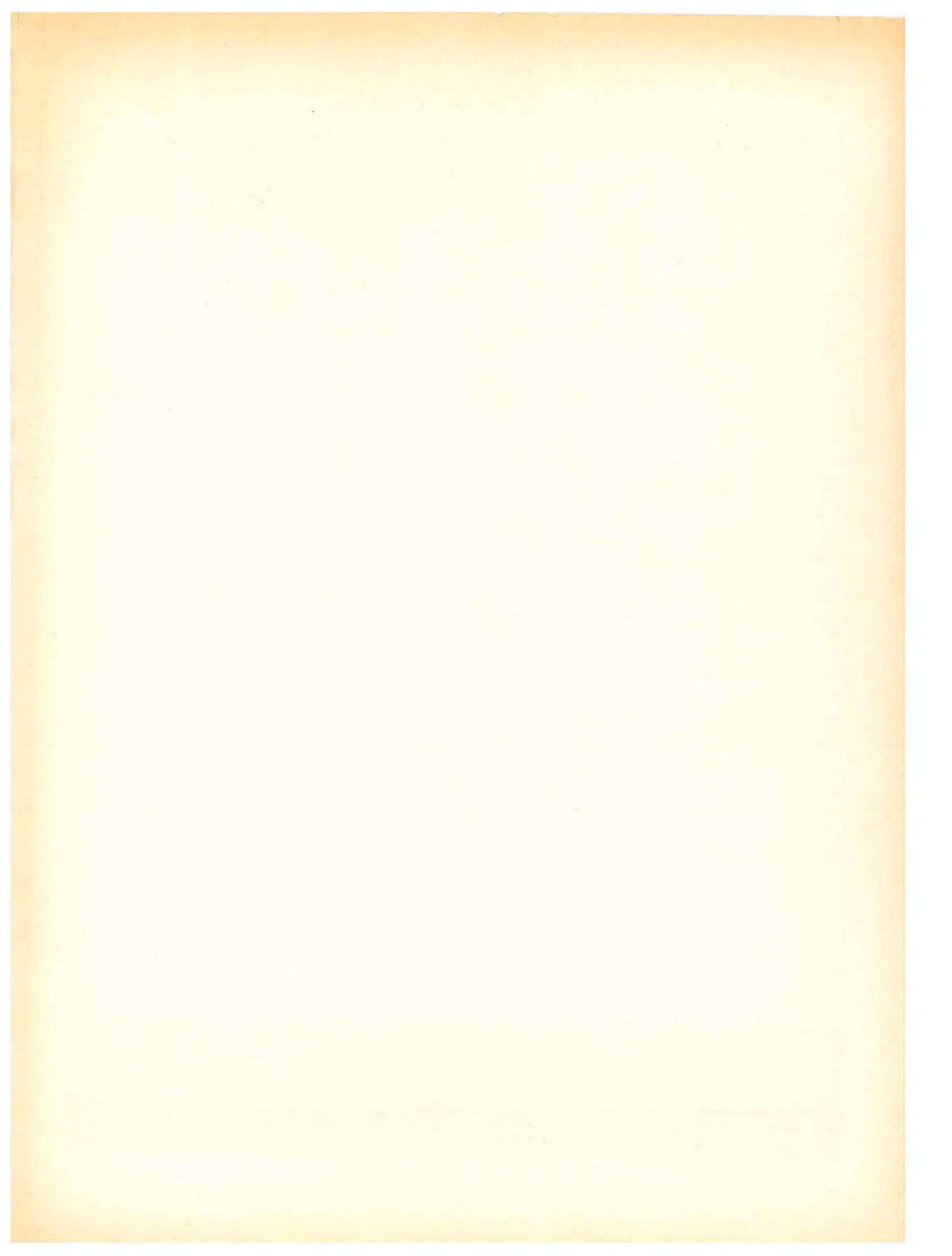
$5 \overline{)13}$	Check	$3 \overline{)14}$	Check	$3 \overline{)19}$	Check
$4 \overline{)76}$		$5 \overline{)85}$		$3 \overline{)72}$	

Answers for page 94:

- | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1. 16 | 2. 18 | 3. 37 | 4. 13 | 5. 28 | 6. 17 | 7. 16 | 8. 14 | 9. 18 |
| 10. 18 | 11. 17 | 12. 18 | 13. 25 | 14. 23 | 15. 39 | 16. 19 | 17. 48 | 18. 28 |

Answers for page 95:

- | | | | | | |
|--------------------------|--------------|--------------|--|------|-------|
| 1. a. 36 inches | b. 12 inches | c. 27 inches | 2. a. 4 | b. 8 | c. 32 |
| 3. Jane, 2 ounces more | | | 4. 7:12 Temperature 43°, 12:42 Temperature 68° | | |
| 5. \$3.52, \$1.48 change | | 6. 514 miles | 7. Always 3 | | |



LOOK FOR THESE
Other WHITMAN Workbooks

prepared
under the direction of
PAUL EBERMAN, Ph.D.
Professor of Education
UNIVERSITY OF WISCONSIN

Suggestions to Parents and Teachers

ALONG THE WAY IN ARITHMETIC

ALONG THE WAY IN ARITHMETIC is the fourth book in the WHITMAN ARITHMETIC series. This series has been carefully planned to include the material usually dealt with in public school arithmetic programs through the third grade. The child who masters the work of this fourth book will be able to move on to the work of the fourth grade with confidence. Should the child encounter difficulty with this workbook, it is suggested that he go back to and master the work in MOVING ALONG IN ARITHMETIC, the third book of this series. Should he continue to experience difficulty with the third volume, NEXT STEPS IN ARITHMETIC and FIRST STEPS IN UNDERSTANDING ARITHMETIC are recommended to provide the help he probably needs. He should then be able to return to the present volume with the basic understanding and skills needed.

ALONG THE WAY IN ARITHMETIC first reviews addition and subtraction through two-place numbers and the simple units of measure introduced in preceding volumes. The child is then introduced to addition and subtraction with three-place numbers and to additional units of measure. Finally, this volume contains an introduction to beginning multiplication and division limited to the simpler beginning combinations. Throughout the book emphasis is placed on helping the child discover why he does what he does in performing the operations of arithmetic. The book, moreover, provides opportunities for the child to apply what he has learned to familiar problems of everyday living.

This book is designed for children ranging in age from seven to ten. The average and bright seven year old who has developed reasonable competence in reading skills should be able to use the volume with very little outside help. For children who experience difficulty with and fall behind in arithmetic at the third, fourth, and fifth grade levels, ALONG THE WAY IN ARITHMETIC should be extremely helpful. In cases where the child's arithmetic difficulties are severe, all or portions of the first three books in this series may be needed to help him overcome his individual problems.

This ARITHMETIC series is designed to be as self-contained as possible. Directions to children on the workbook pages have been kept simple; most children will experience little difficulty in knowing exactly what to do. Each volume allows the child to check his own work as he moves along at his own rate; answers to problems and exercises are supplied on pages close to the work itself. Because of these features, parents and teachers are urged to avoid helping the child unless absolutely necessary. As the child achieves independent mastery of number ideas, adults can be helpful by providing opportunities for him to use his acquired knowledge in daily activities.

